RATE ANALYSIS NORMS

DEPARTMENT OF IRRIGATION
2002

Units and Abbreviations

Units

(Note the S1 system for units has been applied except where conformity with the original document requires otherwise)

cu.m.m3	cubic metre
hr.	hour
Lt.	Litre
m	metre
mm	milimetre
sq.m	square metre
m-day	man day
M.t.	Metric tone
Nr.	number
t	tonne
R-m	Running meter

Abbreviations

A.C.	Asbestos Cement
Aggrts.	Aggregates
Aprox	Approximate
B-ler	Boiler
Blstone	Blockstone
Carbor	Carborundum
C.G.I.	Corrugated Galvanized Iron
C.I.	Cast Iron
Conc	Concrete
Const	Construction
Dia or dia	Diameter
Dist.	Distance
D-nator	Detonator
Er	Engineer
Forms	Formwork
F-Wire	Fuse wire
F-stone	Flagstone
Gen	Generator
G.I.	Galvanized Iron
HDPE	High Density Polythene Pipe

Procedures for obtaining Total Rate of Item of Works

Labour Costs	(L)
Materials Costs	(M)
Machinery (Including Fuel)	(N)

Total Rate (L)+(M)+(N) = (J)

Contractor's Overhead (15% of J) ..... = 0.15 (J)

Total (Without Tax) +			(K) = 1.15X (J)
VAT 10% of (K)	=	0.010 X (K)	= 0.115 X (J)

Total Rate (Z) = 1.2665 X (J)

Note:

1. Take rate of Item as (J) if works are executed departmentally
2. Take rate of Item as (Z) if works are executed through contractor.
3. Take rate of Item as 1.2075 of (L) if works as executed through labour contract only. (All the machinery and materials are supplied departmentally).

H-per, Hlpr	Helper
HSD	High speed Diesel
uPVC	uniplasticised Poly Vinyl Chloride
Incl	Including
J-hooks	J-shaped hooks
Kmph	Kilometers per hour
KV	Kilovolt
Lead	Horizontal Distance
Lift	Vertical Distance
Mat.	Materials
Mech	Mechanical
M.S.	Mild steel
Ovsr	Overseer
PCC or P.C.C	Plain Cement Concrete
P.G. Tiles	Porcelain Glazed Tiles
Preserv.	Preservative
PVC	Polyviny1 Chloride
RB or R.B	Reinforced Bricks
RCC of R.C.C	Reinforced Cement Concrete
Rein	Reinforced or reinforcing
R-ler	Roller
Skill	Skilled
Semi-skl	Semiskilled
Spvsr.	Supervisor
S.W.G. or SWG	Standard Wire Gauge
S-yer, Spyer	Sprayer
Turpent	Turpentine
U-hooks	U shaped hooks
Unlo	Unload
Unskl	Unskilled

Procedures for obtaining Total Rate of Item of Works

Labour Costs (L)
Materials Costs (M)

Machinery (Including Fuel) (N)

Total Rate (L)+(M)+(N) = (J)

Contractor's Overhead (15% of J) ..... = 0.15 (J)

Total (Without Tax) + (K) = 1.15X (J)
VAT 10% of (K) = 0.010 X (K) = 0.115 X (J)

Total Rate (Z) = 1.2565 X (J)

Note:

1. Take rate of Item as (J) if works are executed departmentally
2. Take rate of Item as (Z) if works are executed through contractor.
3. Take rate of Item as 1.2075 of (L) if works as executed through labour contract only (All the machinery and materials are supplied departmentally).

1. Site Preparation

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty.	Type	Unit	Qtty.	Type	Unit	Qty.	
1.	1. Fell trees, cut up & dispose 5 m away from the constr. site (the dia. of tree is is measured 1m above the ground).											
	a. 12-30 cm dia.	each	unskl	m-day	0.13							
	b. 31-60 cm dia.	"	"	"	0.39							
	c. 61-90 cm dia.	"	"	"	0.98							
	d. 91-120 cm dia.	"	"	"	0.98							
	e. 121-180 cm dia.	"	"	"	4.00							
	f. 181-240 cm dia.	"	"	"	4.00							
	g. 241-300 cm dia.	"	"	"	10.40							
	h. above 301 cm dia.	"	"	"	41.67							
	2. Uprooting trees & Disposal 15m far from the const. site.											
	a. 12-30 cm dia.	each	unskl	m-day	0.40							
	b. 31-60 cm dia.	"	"	"	0.53							
	c. 61-90 cm dia.	"	"	"	2.52							
	d. 91-120 cm dia.	"	"	"	2.52							
	e. 121-180 cm dia.	"	"	"	12.0							
	f. 181-240 cm dia.	"	"	"	12.0							
	g. 241-300 cm dia.	"	"	"	29.6							
	h. above 301 cm dia.	"	"	"	-							
	3. cutting thick vegetation, grubing their roots & disposal 25m far from the const. site. (the vegetation dia. < = 30cm & density > 15nr/100m²	Sq.m	unskl	m-day	0.04							
	4. Cutting thin vegetation, grubing their roots & disposal 25m far from the const. Site. (the vegetation dia. <=30cm & density <=15nr/100m2).	Sq.m	unskl	m-day	0.03							
	5. Cutting uprooting & disposal of grasses with light compaction, levelling & clearing the site.	Sq. m	unskl	m-day	0.023							
	6. Cutting, uprooting & disposal of bamboo (measure volume of excavation.)	cu.m	unskl	m-day	2.80							
	7. Surface dressing works including filling dipressions, cutting mounds & ground levelling (service roads etc.)	Sq.m	unskl	m-day	0.01							

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty.	Type	Unit	Qtty.	Type	Unit	Qtty.	
1	8. Removal of top soils & disposal away from the const. site (thickness = 15-20 cm).	sq.m	unskl	m-day	0.16							
	9. Spreading top soils at the required slope.	cu.m	unskl	m-day	0.04							
	10. Dressing nicely the spreading top soils in slope including levelling & light compaction	Sq.m	unskl	m-day	0.01							

2. Earthworks

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
2	1. Excavation of soft clay & silty soils including disposal (up to 10m lead & 1.5m lift)	Cu.m	unskl	m-day	0.70							Add 3% of unskl labour in earthworks for machine-tools
	2. Excavation of hard clay & soils mixed with soft moorum stones (up to 30cm size) including disposal (up to 10m lead & 1.5m lift)	Cu.m	unskl	m-day	0.80							
	3. Removal of stones and disposal up to 10m lead & 1m lift)	Cu.m	unskl	m-day	1.00							
	4. Excavation of medium rocks without blasting disposal up to 10m lead & 1.5m lift)	Cu.m	unskl	m-day	3.00							
	5. Excavation of medium rocks with drilling, blasting and disposal (up to 10m lead & 1.5 m lift)	Cu.m	unskl skill	m-day m-day	0.50 2.00	Gelatin D-nator F-wire	kg Nr. m	0.18 2.00 2.00				Skilled labour is called blaster.
	6. Excavation of hard rocks without blasting, disposal (up to 10m lead & 1.5m lift)											
	a. without chisel	Cu.m	unskl	m-day	5.00							
	b. with chisel	Cu.m	unskl	m-day	24.20							
	7. Excavation of hard rocks with drilling, blasting and disposal (up to 10m lead & 1.5 m lift)	Cu.m	unskl skil	m-day m-day	1.00 0.2	Gelatin D-nator F-wire	kg Nr. m	0.25 2.00 2.00				
	8. Breaking of boulders by drilling & blasting, and disposal (up to 10m lead & 1.5 m lift)	Cu.m	unskl skill	m-day m-day	3.35 0.05	Gelatin D-nator F-wire	kg Nr. m	0.15 1.00 1.00				
	9. Excavation of soft soils, and disposal (up to 10m lead & 1.5 m lift)	Cu.m	unskl	m-day	1.00							
	10. Excavation infractured and soft rocks, and disposal (up to 10m lead & 1.5 m lift	Cu.m	unskl	m-day	2.50							
	11. Excavation in medium rocks using blasting, disposal (up to 10m lead & 1.5m lift)	cu.m	unskl skill	m-day "	3.00 0.05	Gelatin D-nator F-wire	Kg Nr m	0.18 2.00 2.00				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
2.	12. Ditch cutting in hard soilsm, disposal (up to 10m lead and 1.5m lift)	cu.m	unskl	m-day	1.25							
	13. Trench cutting in hard rocks with drilling and blasting, disposal (up to 10m lead and 1.5m lift)	cu.m	unskl skill	m-day m-day	4.50 0.05	Gelatin D-nator F-wire	Kg Nr m	0.25 2.00 2.00				
	14. Excavation for foundation, drain, pipeline etc in boulder mixed soils, disposal (up to 10m lead and 1.5m lift)	cu.m	unskl	m-day	1.59							
	15. Excavation for foundation works, drains etc, including disposal (up to 10m lead and 1.5m lift)											
	a. soft moorum rocks	cu.m	unskl	m-day	3.00							
	b. medium hard rocks (Without blasting)	cu.m	unskl	m-day	4.50							
	16. Excavation for foundation works drains tunnel etc, in hard rocks including disposal up to 10m lead and 1.5m lift.											
	a. Drilling & blasting used.	cu.m	unskl skill	m-day m-day	4.70 0.05	Gelatin D-nator F-wire	Kg Nr m	0.25 2.00 2.00				
	b. Without blastion and chiselling	cu.m	unskl	m-day	25.20							
	17. Box cutting in soils including disposal up to 10m lead and 1.5m lift.											
	a. Soft soils. b. Hard soils.	cu.m cu.m	unskl unskl	m-day m-day	0.78 0.94							Depth<0.50m
	18. Dry foundation box cutting in soft mooram rocks, disposal (up to 10m lead and 1.5m lift)	cu.m	unskl	m-day	2.00							
	19. Box cutting in medium rocks including disposal up to 10m lead and 1.5m lift	cu. m	unskl	m-day	2.50							

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
2	20. Dry foundation excavation in hard gravel mixed soils (dia. of gravel> 10cm) with disposal up to 10m lead and 1.5m lift.	cu. m	unskl	m-day	1.69							
	21. Dry foundation excavation in hard gravel mixed soils (dia. of gravel< 10cm) with disposal up to 10m lead and 1.5m lift	cu. m	unskl	m-day	1.36							
	22. Fourdation excavation under shallow water depth in hard gravel mixed soils (dia. of grave > 10cm) with disposal up to 10m lead and 1.5m lift	cu. m	unskl	m-day	2.50							
	23. Fourdation excavation under shallow water depth in hard gravel mixed soils (dia. of gravel < 10cm) with disposal up to 10m lead and 1.5m lift	cu. m	unskl	m-day	2.30							
	24. Fourdation excavation under water in boulder and gravel mixed soils including disposal up to 10m lead											Reduce one labour for foundation excavation in gravel & boulder in dry condition
	a. 1.00m deep excavation & 4.00m lift	cu. m	unskl	m-day	1.51							
	b. 2.00m deep excavation & 4.00m lift	cu. m	unskl	m-day	3.60							
	c. 3.00m deep excavation & 4.00m lift	cu. m	unskl	m-day	3.70							
	d. 4.00m deep excavation & 4.00m lift	cu. m	unskl	m-day	3.80							
	e. 5.00m deep excavation & 7.50m lift.	cu-m	unskl	m-day	4.20							
	f. 6.00m deep excavation & 7.50m lift.	cu. m	unskl	m-day	4.30							
	25. Filling with ordinary soils in 15cm thick layers and hand compaction (haulage distance 10m)											Haulage of water not included
	a. with sprinkling water.	cu.m	unskl	m-day	0.50							
	b. no sprinkling water.	cu.m	unskl	m-day	0.25							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty	Type	Unit	Qty	Type	Unit	Qty	
2	26. Filling with stones in 40cm thick layers, sprinkling water and hand compaction (haulage distance 10m)	cu.m	unskl	m-day	1.00							Haulage of water not included
	27. Each additional haulage distance of 10m (50% by basket and 50%by wheel barrow)	cu.m	unskl	m-day	0.12							
	28. Each additional lift of 1.00m using labour.	cu.m	unskl	m-day	0.08							1.00 m3 of soils=1600.00kg .under this basis the labour needed for additional (each) 10m lead 1.20m lift of otheer materiaals can be taken as o.o75 m-day.
	29. Foundation excavation in ordinary soils under shallow water depth (10m lead and 1.5m lift)	cu.m	unskl	m-day	2.25							
	30. Foundation excavation in soft rocks under shallow water depth (10m lead & 1.5m lift)	cu.m	unskl	m-day	3.33							Labour need can be taken as 0.05 m-day.
	31. Excavation of foundation in hard rocks under shallow water depth using drilling & blasting, disposal (up to 10m lead & 1.5m lift)	cu.m	unskl skill	m-day	7.30 0.05	Gelatin D-nator F-wire	Kg Nr m	0.25 2.00 2.00				
	32. Additional for sawing and planking in the case of deep foundation excavation	cu.m	unskl	m-day	0.50							
	33. Bottom trimming of foundation excavated on rocks	Cu.m	unskl	m-day	0.61							
	34. Pumping water out of foundation or depression	5000 Ltr							pump	Hr		Estimate quantity of machinery as per capacity of pumps
	35. Compacting soils by roller in 20cm thick layers a. Using road roller.	Sq.m							Road Roller 8/10 t	Hr	1.67	

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
2	b Using 1 ton RCC hand roller	100 cu.m	unskl	m-day	53.0				Rcc Roller 1.00t	Hour		
	36. Cutting steps in soils and removing them (Slope<50%)											
	a. Soft soils	sq.m	unskl	m-day	0.18							
	b. hard soils	sq.m	unskl	m-day	0.28							
	37. Additional labour needed required for removing boulders from excavation of gravel and boulder mixed soils.	cu.m	unskl	m-day	0.72							
	38. Additional labour needed for excavation of swampy, hard and wet soils.	cu.m	unskl	m-day	0.36							
	39. Filling soils in pipeline trenches in 20cm thick layers including hand compaction and water sprinkling				3.80							a. Add two m-day for works under water pump are used
	a. soft soils	cu.m	unskl	m-day	0.50							
	b. medium rocks.	cu.m	unskl	m-day	0.55							b. Additional amount needed if
	c. hard soils	cu.m	unskl	m-day	0.63							
	d. gravel & boulder mixed soils	cu.m	unskl	m-day	0.60							
	e. medium rocks.	cu.m	unskl	m-day	1.10							
	f. hard rocks	cu.m	unskl	m-day	1.10							
	40. Grass Sodding works including sod cutting, transporting, placing in position and water sprinkling	sq.m	unskl	m-day	0.05							
	41. Spreading manure on the grass turf	100 sq.m	unskl	m-day	0.04	Chemical manures sand	kg. cu.m	7.00 1.10				
	42. sand filling works including water sprinkling & hand compaction	cu.m	unskl	m-day	0.70							
	43. Making bank by filling by all type of soils in 22cm th. layers including breaking soil lumps and simple dressing.											
	a. Up to 1.5m lift & 10m lead	cu.m	skill unskl	m-day m-day	0.01 0.36							
	b. Up to 1.5m lift & 30m lead	cu.m	skill unskl	m-day m-day	0.01 0.50							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
2	44 . Making bank by using soils obtained from the canal excavation in ordinary soils, breaking soils lumps, forming profile including dressing and adjustment of slope & grade of tank as well as canal (up to 1.5m lift and 30m lead)	cu.m	skill unskl	m-day m-day	0.03 0.50							
	45. Prevention of land slides in various types of soils											
	a. ordinary soils	cu.m	unskl	m-day	0.42							3% of labour cost
	b. gravel & boulder mixed soils	cu.m	unskl	m-day	0.53							"
	c. soft rocks	cu.m	unskl	m-day	0.88							"
	d. hard rocks	cu.m	unskl	m-day	1.10							4% of labour cost

3. Collection and providing of materials

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
3	1. Collection, screening & providing of sand (haulage distance 10m)											
	a. Source capacity < 30%	cu.m	unskl	m-day	4.54							
	b. Source capacity 31-50%	"	"	"	3.45							
	c. Source capacity 51-65%	"	"	"	2.50							
	d. Source capacity > 65%	"	"	"	1.43							
	e. Hilly areas (excavating deposits)	"	"	"	1.49							
	2. Collection, screening and providing of gravel (haulage distance 10m)											
	a. 5mm-70mm & above	cu.m	unskl	m-day	2.50							
	b. 5mm- 40mm (up to)	"	"	"	4.00							
	c. 5mm-20mm "	"	"	"	5.88							
	d. 5mm-80mm "	"	"	"	10.0							
	3. Collection of stone gravel including screening & stacking (haulage distance 10m)											
	a. 40mm-70mm	cu.m	unskl	m-day	5.00							
	b. 70mm-100mm	"	"	"	4.00							
	4. Collection of rubble stone of required size including stacking (haulage dist. 10m)	cu.m	unskl	m-day	1.40							
	5. Breaking, collection and screening of stone including stacking (haulage dist. 10m)											
	a. 70mm-100mm	cu.m	unskl	m-day	7.00							
	b. 40mm-70mm	"	"	"	9.00							
	c. 20mm-40mm	"	"	"	15.00							
	d. 10mm-20mm	"	"	"	21.50							
	e. 05mm-10mm	"	"	"	29.00							
	6 Making required size rough blocks from boulders including drilling, blasting, breaking, dressing one side, hauling up to a distance of 10m and stacking.	cu.m	unskl skill	m-day m-day	8.15 0.05	Gelatin D-nator F-wire	kg. Nr. m	0.15 1.00 1.00				
	7. Making required size rough blocks from boulders including one side dressing, hauling up to a distance of 10m and stacking but not blasting	cu.m	unskl	m-day	9.63							

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
3	8. Making required size blocks from bedding rocks, hammer dressing, hauling up to a dist. of 10m and stacking	cu.m	unskl	m-day	5.88							
	9. Making required size blocks from boulders using chisels including haulage up to 10m and stacking											
	a. Three sides rough and one side smooth	cu.m	unskl	m-day	20.0							
	b. Square blocks with five sides rough and one side smooth.	cu.m	unskl	m-day	34.48							
	10. Making rubble stone of required size including drilling, blasting, hauling up to a dist. of 10m & stacking.	cu.m	unskl	m-day	4.50	Gelatin	Kg	0.15				
			skill	"	0.05	D-nator	Nr	1.00				
						F-wire	m	1.00				
	11. Making rubble stone of required size including breaking using chisels. hauling up to a distance of 10m and stacking.	cu.m	unskl	m-day	5.50							
	12. Wasing & cleaning by water.											
	a. Sand.	cu.m	unskl	m-day	2.00							
	b. Cut stones.	cu.m	unskl	m-day	1.75							
	c. Rubble stones.	cu.m	unskl	m-day	0.50							
	d. Gravel.	cu.m	unskl	m-day	1.75							
	13. Piling aggregates, stones bricks etc. in the const. site.											
	a. Bricks	1000 Nr	unskl	m-day	0.30							
	b. Aggregates	cu.m	unskl	m-day	0.34							
	14. Piling cement in bags & stacking again	Bag	unskl	m-day	0.05							

4. Mortar Preparation work for masonry

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty.	
4	1. Making cement mortar, lifting and hauling up to a distance of 10m including mixing with water.											
	a. 1:3 (1 cement : 3 sand)	cu.m	unskl	m-day	1.89	cement sand	M.t. cu.m	0.37 1.10				
	b. 1:4 (1 cement : 4 sand)	cu.m	unskl	m-day	1.89	cement sand	M.t cu.m	0.29 1.17				
	c. 1:6 (1 cement : 6 sand)	cu.m	unskl	m-day	1.89	cement sand	M.t cu.m	0.21 1.26				
	d. 1:8 (1 cement : 8 sand)	cu.m	unskl	m-day	1.89	cement sand	M.t cu.m	0.19 1.30				
	2. Making lime mortar, lifting and hauling up to a distance of 30m including mixing with water.											
	a. 1 : 2 (1 Lime : 2 sand)	cu.m	unskl	m-day	1.89	Lime sand	cu.m cu.m	0.475 0.95				
	b. 1 : 2 (1 Lime : 2 surkhi)	cu.m	unskl	m-day	1.89	lime surkhi	cu.m cu.m	0.475 0.95				

5. Brickworks

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
5	1. Brick masonry works along with supplying bricks making cement- sand mortar & const of brick walls including haulage distance											Size of bricks considered is 224 X 108 X 57 (mm)3. For the other size of bricks number of bricks can be increased or decreased similarly amount of mortar can also be adjust Nr. of bricks the considered size also included wastage due to bricking etc. Further engineer can estimate the required Nr. of bricks as per their size.
	a. Machine made bricks up to 30m. - 1:3 cement sand mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks cement sand	Nr M.t. cu.m	530.0 0.13 0.27				
	-1:4 cement sand mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks cement sand	Nr M.t. cu.m	530.0 0.10 0.27				
	- 1:5 cement sand mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks cement sand	Nr M.t. cu.m	530.0 0.09 0.31				
	- 1:6 cement sand mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks cement sand	Nr M.t. cu.m	530.0 0.70 0.30				
	b. Chimney (Bhatta) Bricks - 1:3 cement sand mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks cement sand	Nr M.t. cu.m	560.0 0.13 0.27				
	- 1:4 cement sand mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks cement sand	Nr M.t. cu.m	530.0 0.10 0.28				
	- 1:6 cement sand mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks cement sand	Nr M.t. cu.m	560.0 0.07 0.30				
	-1:1:1 Lime surkhi mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks Lime Surkhi sand	Nr cu.m Nr cu.m	560.0 0.14 0.14 0.14				
	-1:2 Lime surkhi mortar	cu.m	skill unskl	m-day m-day	1.50 2.20	Bricks Lime Surkhi	Nr cu.m cu.m	560.0 0.14 0.28				
	-mud mortar	cu.m	skill unskl	m-day m-day	1.00 1.7	Bricks Soils	Nr cu.m	560.0 0.42				
	2. Brickworks in cement mortar Additional works in a ground floor in making supports for working	cu.m	unskl	m-day	0.20	Planks bamboo ropes, nails etc	-	3% of labour cost				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
.5	b. Additional works for more than one storey	cu.m	unskl	m-day	0.70	Planks bamboo ropes. nails etc.		3% of labour cost				
	c. Additional works for constructing well	cu.m	unskl	m-day	1.00	"		"				
	3. Removing damaged bricks from wall face & repairing it with cement sand mortar (1:6)	cu.m	skill unskl	m-day m-day	3.53 7.03	Nr.one bricks cement sand	Nr kg cu.m	560.0 84.00 0.36				
	4. Removing damaged bricks from wall face & repairing it with limed surkhi mortar (1:2)	10 cu.m	skill unskl	m-day m-day	35.28 70.56	Nr.one bricks cement sand	Nr. M.t. cu.m	5600.0 1.40 2.80				
	5. Wiping the old surface with linseed oil and painting it by prepared enamel paint (single coat)	10 sq.m	skill unskl	m-day m-day	0.538 0.538	Linseed oil Prepared enamel paint.	Litre Litre	0.538 1.614				

6. Stoneworks

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
6	1. Rubble masonry works including supply of hard stone blocks, preparing cement mortar, and const. of wall upto 5m high (haulage distance upto 10m)											Add 1.17 m-day of unskilled labours for wall 5-10 m high
	a. Cement mortar 1:3	Cu.m	skill unskl	m-day "	1.50 5.00	Cement Sand Blockstone Bondstone	Mt Cu. " "	0.194 0.42 1.00 0.10				
	b. Cement mortar 1:5	Cu.m	skill unskl	m-day "	1.50 5.00	Cement Sand Blockstone Bondstone	Mt. Cu " "	0.159 0.45 1.00 0.10				
	c. Cement mortar 1:6	Cu.m	skill unskl	m-day "	1.50 5.00	Cement Sand Blockstone Bondstone	Mt. Cu " "	0.106 0.47 1.00 0.10				
	2. Rubble masonry works including supply of hard stone blocks & const. of wall upto 5m high (haulage distance up to 30m)											
	a. Dry wall	Cu.m	skill unskl	m-day "	1.00 2.00	Blockstone Bondstone	Cu. "	1.00 0.10				Add 1.17 m-day of unskilled labours for wall 5 -10m high
	b. Mud mortared wall	Cu.m	skill unskl	m-day "	1.00 2.00	Blockstone Bondstone Soils	Cu. " "	1.00 0.10 0.42				
	3. Rubble masonry works for the construction of arch or conical surface including supply of block stones, preparing cement mortar and constructing walls (haulage distance up to 30m)											
	a. Cement mortar 1:3	Cu.m	skill unskl	m-day "	2.00 5.40	Cement Sand Blockstone Bondstone	Mt Cu " "	0.194 0.42 1.00 0.10				
	b. Cement mortar 1:4	Cu.m	skill unskl	m-day "	2.00 5.40	Cement Sand Blockstone Bondstone	Mt Cu " "	0.159 0.45 1.00 0.10				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
	c. Cement mortar 1:6	Cu.m	skil unskl	n-day n-day	2.00 5.40	Cement Sand Blockstone Bondstone	Mt Cu " "	0.106 0.47 1.00 0.10				
	d. Quarry stone works in lime sand mortar (1 : 2)	10 Cu.m	skill unskl	n-day n-day	15.00 42.00	Stone Lime Sand	Cu. " "	11.00 1.60 3.20				
	e. Dressed quarry stone in cement sand mortar (1 : 6)	10 Cu.m	skill unskl	n-day n-day	15.00 30.00	Dressed stone Cement Sand	Cu. Mt. Cu	11.00 1.40 4.20				
	4. Wall construction by dry rubble stones used in filling of abutments, including haulage dist. up to 30 m.	Cu.m	skill unskl	n-day n-day	0.30 1.20	Blockstone Bondstone	Cu. "	1.00 0.10				
	5. Filling by stones in the foundation and levelling including haulage distance up to 30 m.	Cu.m	unskl	n-day	1.50	Blockstone Bondstone	Cu. "	1.00 0.20				
	6. Stone masonry works of side ditch in cement mortar including preparation of mortar hauling stones and mortar up to 30m distance and construction of ditch.											
	a. 1 : 3 Cement mortar	Cu.m	Skill Unskl	n-day n-day	1.43 5.72	Cement Sand Blockstone Bondstone	Mt Cu " "	0.153 0.321 1.00 0.10				
	b. 1 : 6 Cement mortar	Cu.m	Skill Unskl	n-day n-day	1.73 5.72	Cement Sand Blockstone Bondstone	Mt Cu " "	0.075 0.306 1.00 0.10				

7. Cement Concrete Works

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
7.	1. Concreting of found... vert. faces, walls and abutments (plum concrete) including supply of materials & haulage distance up to 30m											
	a. P.C.C 1 : 3 : 6	Cu.m	skill	m-day	0.30	Cement	Mt	0.22				
			unskl	,,	4.00	boulder (225 mm)	Cu	0.14				
						Aggrts.						
						20 mm	Cu	0.60				
						10 mm	,,	0.20				
						Course sand	,,	0.47				
	b. P.C.C 1 : 2 : 4	Cu.m	skill	m-day	0.30	Cement	Mt	0.32				
			unskl	,,	4.00	boulder (225 mm)	Cu	0.13				
						Aggrts.						
						20 mm	Cu	0.57				
						10 mm	,,	0.19				
						Course sand	,,	0.445				
	2. Concreting of foundations, vert. faces, walls (cement conc.) incl. supply of materials and haulage dist up to 30 m.											
	a. P.C.C 1 : 5 : 10	Cu.m	skill	m-day	1.00	Cement	Mt	0.13				
			unskl	,,	4.00	Aggrts.						
						40 mm	Cu	0.65				
						20 mm	,,	0.24				
						Course sand	,,	0.47				
	b. P.C.C 1 : 4 : 8	Cu.m	skill	m-day	1.00	Cement	Mt	0.17				
			unskl	,,	4.00	Aggrts.						
						40 mm	Cu	0.65				
					1.00	20 mm	,,	0.24				
					4.00	Course sand	,,	0.47				
	C. P.C.C 1 : 3 : 6	Cu.m	skill	m-day	1.00	Cement	Mt	0.22				
			unskl	,,	4.00	Aggrts.						
						40 mm	Cu	0.65				
						20 mm	,,	0.24				
						Course sand	,,	0.47				
	d. P.C.C 1 : 2 : 4	Cu.m	skill	m-day	1.00	Cement	Mt	0.32				
			unskl	,,	4.00	Aggrts.						
						40 mm	Cu	0.52				
						20 mm	,,	0.22				
						10 mm	,,	0.11				
						Course sand	,,	0.445				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
7.	3. Concreting in abutment seats, piel caps etc. including supply of materials & haulage distance up to 30 m.											
	a. P.C.C 1:3:6	Cu.m	Skill unskl	m-day ,,	0.9 10.00	cement aggrts. 40mm 20mm sand	Mt. Cu ,, ,,	0.22 0.65 0.24 0.47				
	b. P.C.C 1:2:4	Cu.m	Skill unskl	m-day ,,	0.9 10.00	cement aggrts. 40mm 20mm 10 mm sand	Mt. Cu ,, ,, ,,	0.32 0.52 0.22 0.11 0.445				
	4. Concreting works of super structures, deck slabs, beams including supply of materials and haulage up to 30 m											
	a. P.C.C 1:2:4	Cu.m	Skill unskl	m-day ,,	0.80 7.00	cement aggrts. 40mm 20mm 10mm Course sand	Mt. Cu ,, ,, ,,	0.32 0.52 0.22 0.11 0.445				
	b. P.C.C 1:1.5:3	Cu.m	Skill unskl	m-day ,,	0.80 7.00	cement aggrts. 20mm 10mm Course sand	Mt. Cu ,, ,,	0.40 0.57 0.29 0.425				
	c. P.C.C 1:1:2	Cu.m	Skill unskl	m-day ,,	0.80 0.70	cement aggrts. 20mm 10mm Course sand	Mt. Cu ,, ,,	0.61 0.64 0.21 0.425				
	5. Cutting, bending, placing in position as shown in the drawings & binding by G.I wire of reinforcement steel bars for R.C.C works incl. haulage distance of 30m	mt.	Skill unskl	m-day ,,	12.00 12.00	M.S. Bars Binding wires	Mt. Kg.	1.05 10.00				
	6. Cement concreting (1: 2: 4) reinforced brick works of slab & lintel incl. haulage distance up to 30m	Cu.m	Skill unskl	m-day ,,	1.50 3.00	Bricks Cement Sand Stone aggrts	Nr. Mt. Cu ,,	470 0.095 0.13 0.26				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
7.	7. 6.35 cm thick R.B. works in 1 : 3 cement mortar	10 Sq.m	skill unskl	m-day m-day	1.15 3.00	Nr. one bricks Cement Sand	Nr. Mt. Cu.	377.0 0.10 0.20				
	8. Making precast culvert pipe a. Making mesh of reinf. bars incl. cutting, bending & hauling up to 30m distance (mesh length 1.00m)											skill labour is bar bender
	- 50cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.244 0.12							
	- 75cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.29 0.15							
	- 100cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.744 0.37							
	b. Fitting reinforcement mesh in wooden mould (mesh length 1.00m)											
	- 50cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.044 0.03							
	- 75cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.066 0.044							
	- 100cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.131 0.09							
	c. Manufacturing precast culvert pipe of length 1m. incl. preparation of concrete, hauling up to 30m distance & pouring in place (1 : 1 : 2 R.C.C)											
	- 50cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.22 1.232	Cement sand Aggrts 20mm 10mm	MT cu.m cu.m cu.m	0.65 0.044 0.065 0.023				
	- 75cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.44 2.50	Cement sand Aggrts 20mm 10mm	MT cu.m cu.m cu.m	0.097 0.066 0.099 0.033				
	- 100cm dia. culvert pipe	Nr.	skill unskl	m-day m-day	0.546 3.09	Cement sand Aggrts 20mm 10mm	MT cu.m cu.m cu.m	0.13 0.088 0.133 0.044				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
7.	9. P.C.C works for precast slabs, beams etc. incl. concrete preparation & hauling up to 30m distance & pouring in place											
	a. 1 : 2 : 4 P.C.C	cu.m	skill	m-day	1.20	Cement	Mt.	0.32				
			unskl	m-day	6.80	Sand	Cu.m	0.445				
						Aggrts.						
						40 mm	"	0.52				
						20 mm	"	0.22				
						10 mm	"	0.11				
	10. Mixing waterproof coat, hauling up to 30m distance and applying	100 sq.m	skill	m-day	0.75							
			unskl	m-day	0.25							
	11. Application of asphalt incl. melting & hauling up to 30m distance	10 sq.m	unskl	m-day	2.00							

8. Formworks

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
8.	1. Making wooden forms incl. selection of materials, measuring, cutting, fixing, nailing as per specified drawings and hauling up to 30m and placing in piles											
	a. Simple standard forms, (Each form < 1 sq.m)	10 sq.m	skill unskl	m-day ,,	2.22 3.33							
	b. Simple standard forms, (Each form < 2 sq.m)	10 sq.m	skill unskl	m-day ,,	1.816 2.724							
	c. Simple forms, (Each form < 1 sq.m)	10 sq.m	skill unskl	m-day ,,	1.584 2.375							
	d. Simple forms, (Each form < 2 sq.m)	10 sq.m	skill unskl	m-day ,,	1.286 1.902							
	e. Forms for circular arch (radius up to 1m)	10 sq.m	skill unskl	m-day ,,	4.00 6.00							
	f. Forms for circular arch (radius 1 to 3m)	10 sq.m	skill unskl	m-day ,,	3.00 4.50							
	g. Forms for circular arch (radius 3 to 6m)	10 sq.m	skill unskl	m-day ,,	2.60 3.89							
	h. Forms for simple structures such as staircase etc.	10 sq.m	skill unskl	m-day ,,	4.20 6.30							
	2. Making wooden forms incl. supply and selection of mat. fixing, nailing according to drawings, placing separators, dismantling forms and hauling up to 30m distance.											Consideration for reuse should also be taken
	a. Flooring & slab works	10 sq.m	skill unskl	m-day ,,	1.72 2.57	Timber nails	cu.m kg.	0.526 2.50				
	b. Vertical surface, wall etc. (4m high & 0.5m wide)	10 sq.m	skill unskl	m-day ,,	1.44 2.10	Timber nails	cu.m kg.	0.526 2.50				
	c. Vertical surface, wall etc. (4.5m high & 0.5m wide)	10 sq.m	skill unskl	m-day ,,	3.19 3.10	Timber nails	cu.m kg.	0.685 3.13				
	d. Vertical surface, wall etc. (5-10m high & upto 0.5m wide)	10 sq.m	skill unskl	m-day ,,	5.19 7.50	Timber nails	cu.m kg.	1.478 6.93				
	e. Vertical surface, wall etc. (up to 5m high & 0.5 to 1.00 wide)	10 sq.m	skill unskl	m-day ,,	2.16 3.24	Timber nails	cu.m kg.	0.526 2.50				
	f. Vertical surface, wall etc. (5m to 10m high & 0.5 to 1.00 wide)	10 sq.m	skill unskl	m-day ,,	5.16 7.64	Timber nails	cu.m kg.	1.348 6.30				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
	3. Erection, adjustment, and nailing of forms for column incl. dismantle, removal and hauling up to 30m											
	a. Perimeter of column (0 - 2m)	10 sq.m	skill unskl	m-day m-day	3.748 5.622							
	b. Perimeter of column (2 - 3m)	10 sq.m	skill unskl	m-day m-day	3.00 4.50							
	c. Perimeter of column (3 - 4m)	10 sq.m	skill unskl	m-day m-day	2.40 3.60							
	4. Making forms for structure beam incl. selection of mat., fixing, nailing, oiling, dismantling, removal and hauling up to 30m distance.											
	a. Depth of beam up to 0.30m	10 sq.m	skill unskl	m-day m-day	4.00 6.00							
	b. Depth of beam up to 0.30m- 0.80m	10 sq.m	skill unskl	m-day m-day	2.67 4.00							
	c. Depth of beam up to 0.80m - 1.20m	10 sq.m	skill unskl	m-day m-day	2.40 3.60							
	5. Making forms for precast unit incl fixing, nailing, oiling, dismantle, removal and hauling up to 30m distance											
	a. Length of beam up to 8.00m	each	skill unskl	m-day m-day	0.80 1.20							
	b. Length of column up to 4.00m & selection up to 0.15 X 0.15m	each	skill unskl	m-day m-day	0.80 1.20							
	c. Pipe dia. up to 0.75m & length up to 1.0m	each	skill unskl	m-day m-day	0.40 0.60							
	6. Featured structural forms a. Depth of beam<0.60m.	10 sq.m	skill unskl	m-day m-day	1.80 2.70							
	b. Column perimeter up to 1.30m.	10 sq.m	skill unskl	m-day m-day	1.68 2.52							
	c. Floor	10 sq.m	skill unskl	m-day m-day	1.44 2.16							

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
8.	7. Making forms and applying bitumen coat to it.	10 sq.m	unskl	m-day	1.43							
	a. Making forms	10 sq.m	unskl	m-day	2.14							
	b. Applying one coat bitumen	10 sqm	unskl	m-day	0.58							
	8. 1 Suspension forms incl. selection of materials, hauling up to 30m. distance, erection, fitting, nailing, bolting, dismantle and removal.											Skilled labour is carpenter
	a. Vertical surface	10 sq.m	skill unskl	m-day m-day	2.03 3.042							
	b. Sloped surface	10 sq.m	skill unskl	m-day m-day	2.80 4.20							
	c. Steep surface (non load bearing)	10 sq.m	skill unskl	m-day m-day	2.40 3.60							
	8.2 Forms for floor incl. selection of mat. hauling up to 30m . distance, erection, fitting, nailing, bolting, dismantle and removal											
	a. Thickness of floor concrete< 20cm.	10 sq.m	skill unskl	m-day m-day	2.184 3.276							With five load.
	b. Thickness of floor concrete>20cm.	10 sq.m	skill unskl	m-day m-day	2.424 3.40							
	9. Forms for wall inc. selection of mat. hauling up to 30m . distance, erection, fitting, nailing, bolting, dismantle and removal											
	a. Width of wall up to 50cm. & height up to 5m.	10 sq.m	skill unskl	m-day m-day	2.40 3.60							
	b. Width of wall up to 50cm. & height up to10m.	10 sq.m	skill unskl	m-day m-day	2.64 3.96							
	c. Width of wall up to 100cm. & height up to 5m.	10 sq.m	skill unskl	m-day m-day	2.16 3.24							
	d. Width of wall up to 100cm. & height up to 10m.	10 sq.m	skill unskl	m-day m-day	2.40 3.60							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty.	Type	Unit	Qty.	Type	Unit	Qty	
9.	10. Forms for intake incl. selection of mat. hauling up to 30m distance, erection, fitting, nailing, bolting, dismantle and removal (etc.)											
	a. Side arch.	10 sq.m	skill unskl	m-day m-day	1.72 2.75							
	b. Crown arch.	10 sq.m	skill unskl	m-day m-day	2.01 2.01							
	c. Transition	10 sq.m	skill unskl	m-day m-day	2.64 3.96							
	11. Selection of various types of materials for forms, hauling up to 30m distance, erection, fitting, nailing, bolting, dismantle and removal											
	a. Minor wooden house	10 sq.m	skill unskl	m-day m-day	2.184 3.28							
	b. manhole	10 sq.m	skill unskl	m-day m-day	0.80 1.20							
	c. Holes for ventilation	10 sq.m	skill unskl	m-day m-day	1.332 2.00							
	d. Door opening	10 sq.m	skill unskl	m-day m-day	4.00 6.00							
	12. Selection of materials for key-way forms, hauling up to 30m distance, erection, fitting, nailing, bolting, dismantle and removal (etc.)											
	a. Horizontal key - way	10 sq.m	skill unskl	m-day m-day	0.40 0.60							
	b. Vertical key - way	10 sq.m	skill unskl	m-day m-day	0.75 1.13							
	c. Horizontal key - way	10 sq.m	skill unskl	m-day m-day	1.20 1.80							
	13. Open types of woodworks needed for trench works incl. supply of materials & fitting.											Salvage value of timber shall be 25% of its original cost after using them six times
	a. Up to 1.5m depth	100 sq.m	skill unskl	m-day m-day	0.25 0.25	Planks Walling & Struts	Sq.m Cu.m	33.33 2.03				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty.	Type	Unit	Qty.	Type	Unit	Qty	
8	13. b. Between 1.5m & 3.0m	100 Sq.m	skill unskl	m-day "	0.50 1.00	Planks Walling & Struts	Sq.m Cu.	33.33 2.03				
	c. More than 3.0m	100 Sq.m	skill unskl	m-day "	1.00 1.75	Planks Walling & Struts	Sq.m Cu.	33.33 2.03				
	14. Closed types of timber works needed for trench works incl. supply of materials and fitting.											
	a. Less than 1.5m depth	100 Sq.m	skill unskl	m-day "	0.50 1.00	Planks Walling & Struts	Sq.m Cu.	100.0 2.47				Salvage value of timber shall be 25% of its original cost after using them six times
	b. Between 1.5m & 3.0m	100 Sq.m	skill unskl	m-day "	1.00 2.00	Planks Walling & Struts	Sq.m Cu.	100.0 2.47				
	c. More than 3.0m	100 Sq.m	skill unskl	m-day "	1.50 2.00	Planks Walling & Struts	Sq.m Cu.	100.0 2.47				
	15. Open types of wood works in and nearby excavation incl. supply of materials & fixing.											Salvage value of timber shall be 25% of its original cost after using them six times
	a. Less than 1.5m depth	100 Sq.m	skill unskl	m-day "	0.25 0.50	Planks Walling & Struts	Sq.m Cu.	33.33 1.65				
	b. Between 1.5m & 3.0m	100 Sq.m	skill unskl	m-day "	0.50 1.00	Planks Walling & Struts	Sq.m Cu.	33.33 1.65				
	c. More than 3.0m	100 Sq.m	skill unskl	m-day "	1.00 1.75	Planks Walling & Struts	Sq.m Cu.	33.33 1.65				
	16. Closed types of wood works in and nearby excavation incl. supply of materials and fixing											Salvage value of timber shall be 25% of its original cost after using them six times
	a. Less than 1.5m depth	100 Sq.m	skill unskl	m-day "	0.50 1.00	Planks Walling & Struts	Sq.m Cu.	100.0 1.36				
	b. Between 1.5m & 3.0m	100 Sq.m	skill unskl	m-day "	1.00 2.00	Planks Walling & Struts	Sq.m Cu.	100.0 1.36				
	c. More than 3.0m	100 Sq.m	skill unskl	m-day "	1.50 2.60	Planks. Walling & Struts	Sq.m Cu.	100.0 1.36				

9. Roofworks

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
9.	1. C.G.I sheet roofing works with supply of materials complete.	10 sq.m	skill unskl	m-day "	1.00 1.25	C.G.I. sheet 22 X 24 SWG	Sq.m	12.00				
						Nut-bolt &mm	Nr	30.00				
						J - hooks	Nr.	25.00				
						Bitumen washer	Nr.	55.00				
	2. Making ridge of C.G.I plains sheets & fitting with supply of materials complete	each 10 r.m	skill unskl	m-day "	2.00 3.00	Plain sheet Nut-bolt	M. Nr.	12.00 Approx				
	3. Corrugated asbestos cement sheet roofing works with supply of materials complete.	10 r.m	skill unskl	m-day "	1.00 1.00	sheet Nut-bolt &mm	Sq.m Nr	12.00 30.00				
						J - hooks	Nr.	25.00				
						Bitumen collar	Nr.	25.00				
	4. Making ridge of A.C. sheets and fitting with supply of materials complete.	10 r.m	skill unskl	m-day "	0.50 0.50	Ridge	M.	12.00				
	5. Making slate roof with supply of materials complete.	10 sq.m	skill unskl	m-day "	4.00 5.00	Slates Nails	Sq.m	24.00 Apprx				
	6. Making clay tile roof with supply of materials complete.	10 sq.m	skill unskl	m-day "	0.50 1.50	Tile	Nr.	125.0				
	7. Making ridge of clay tiles with supply of materials	each 10m	skill unskl	m-day "	0.50 0.50	Ridge	Nr.	80.0				
	8. Lime concrete (1 : 1 : 3) roof terracing works of 10cm thickness with supply of materials complete.	10 sq.m	skill unskl	m-day "	1.50 12.0	Brick aggrts Lime surkhi (Scmd.)	Cu.m kg. Cu.m	1.25 1.50 0.40				
	9. Making roofs of grass (eg as khar, babiyo etc.) including supply of materials, forming bamboo frames & fixing											
	a. thickness of roof 8cm	10 sq.m	skill unskl	m-day "	1.50 1.50	Khar Bamboo Ropes Mat	Band Nr. kg. sq.m	8.30 30.0 3.50 12.00				perimeter of a bundle of khar is 15cm

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
9.	9. b. Thickness of roof 15cm	10 sq.m	skill unskl	m-day "	2.00 2.00	Khar Bamboo Ropes Mat	Bund Nr. kg. sq.m	166.0 40.00 5.00 12.00				Use mat only when required
	10. 20mm thick wooden ceiling fitting work with 40 X 20 mm beading joints and supply of materials complete.	10 sq.m	skill unskl	m-day "	1.80 1.50	Timber Nails 40mm screw	Cu.m kg. Nr.	0.26 0.40 160.0				For frame, see 10(16)
	11. 20mm thick wooden ceiling fitting work with supply of materials complete	10 sq.m	skill unskl	m-day "	2.00 2.00	Plain asbestos sheet wooden beading screw 50mm screw 60 mm nails 50mm	Sq.m Cu.m Nr. Nr. Nr.	10.50 0.03 70.00 160.0 0.36				

10. Timber works

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
10	1. Making sal wood frame & fixing											
	a. Door size 900 x 2100mm	each	skil unskl	m-day m-day	1.50 0.15	Sal wood Holdfast 50mm Screw	cu.m Nr. Nr.	0.044 4.00 8.00				
	b. Door size 100 x 75mm	each	skil unskl	m-day m-day	34.00 3.40	Sal wood Holdfast Screw	cu.m Nr. Nr.	1.10 92.00 184.00				
	2. Making shutter in 38mm. thick sal wood frame (shutter size 1.07m x 1.982m	each	skil unskl	m-day m-day	10.00 1.00	Sal wood 100mm. Hinges 150mm. Bolts a. 250mm b. 300mm Locking set Handles Screw	cu.m Nr. Nr. Nr. Nr. Nr. Nr.	0.084 6.00 1.00 1.00 1.00 2.00 Approx				
	3. Making & fitting 3mm glazed shutter in 38 x 75mm. sal wood frame.	each	skil unskl	m-day m-day	9.00 0.90	Sal wood Glass 3mm Hinges 75mm Bolts 100mm Handles Serews	Cu.m Sq.m Nr. Nr. Nr.	0.049 1.085 8.00 4.00 2.00 Approx				
	4. Making & fitting 3mm glazed shutter in 38 X 75mm. sal wood frame (shutter size 1.892 x 1.22 = 2.23sq.m)	each	skil unskl	m-day m-day	9.00 0.90	Sal wood Glass 4mm Hinges 75mm Bolts 100mm Handles]Screws	Cu.m Sq.m Nr. Nr. Nr.	0.049 1.085 8.00 4.00 2.00 Approx				
	5. Making & fixing 5.5mm th. glazed shutter in 38 X 75mm. thick sal wood frame (size of shutter is 1.829 X 1.22)	each	skil unskl	m-day m-day	9.00 0.90	Sal wood Glass 5.5 mm Hinges 75mm Bolts 100mm Handles Screws	Cu.m Sq.m Nr. Nr Nr.	0.049 1.085 8.00 4.00 2.00 Approx				
	6. Making & fixing 6mm thick glazed shutter in 38 X 75mm thick sal wood frame (size of shutter is 1.829 X 1.22)	each	skil unskl	m-day m-day	9.00 0.90	Sal wood Glass 6 mm Hinges 75mm Bolts 100mm Handles Screws	Cu.m Sq.m Nr. Nr. Nr.	0.049 1.085 8.00 4.00 2.00 Approx				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
10	7. Making & fixing 3mm. thick commercial plywood flush shutter (Plywood both sides) in 38mm. thick sal wood frame with shutter size 1.092m X 2.058m)	each	skill	m-day	7.00	Sal wood	cu.m	0.0346				
			unskl	m-day	0.70	comm. Plywood	Sq.m	4.65				
						Hinges 100mm	Nr.	3.00				
						Bolts 150mm.	Nr.	2.00				
						Mortise Lock	Nr.	1.00				
						Screws		Approx				
	8. Making & fixing 3mm. thick tikply flush shutter (tikply both sides) in 38mm. thick sal wood frame with shutter size 1.092m. x 2.055m	each	skill	m-day	7.00	Sal wood	cu.m	0.0346				
			unskl	m-day	0.70	tikply	sq.m	4.65				
						Hinges 100mm	Nr.	3.00				
						Bolts 150mm.	Nr.	2.00				
						Mortise Lock	Nr.	1.00				
						Screws		Approx				
	9. Making and fixing 18 gauge G.I. plain sheet srtucture (G.I. plain sheet both sides) in 38mm. thick sal wood frame with shutter size 1.092m. x 2.055m	each	skill	m-day	7.00	Sal wood	cu.m	0.0346				
			unskl	m-day	0.70	G.I. plain sheet 18g	sq.m	4.65				
						Hinges 100mm	Nr.	3.00				
						Bolts 150mm.	Nr.	2.00				
						Mortise Lock	Nr	1.00				
						Screws		Approx				
						Handle	Nr.	1.00				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
10	10. Making & fixing 24 gauge mosquito proof wire mesh shutter in 38mm thick sal wood frame with shutter size 1.092 x 2.05m.	each	skill unskl	m-day m-day	5.00 0.50	sal wood G.I.wire mesh hinges 100mm Bolts 150mm Handle Spring Screw	cu.m Sq.m Nr. Nr. Nr. Nr.	0.026 2.13 3.00 2.00 2.00 1.00 Approx				
	11. Fixing glass of various thickness in frame using											
	a. Glass thickness 3mm.	Sq. m	skill unskl	m-day m-day	0.06 0.006	Glass 3mm. Timber beds nails	Sq.m m	1.00 4.05 Approx				
	b. Glass thickness 4mm.	Sq. m	skill unskl	m-day m-day	0.06 0.006	Glass 4 mm Timber beds nails	Sq.m m.	1.00 4.05 Approx				
	c. Glass thickness 5.5mm.	Sq. m	skill unskl	m-day m-day	0.06 0.006	Glass 5.5mm Timber beds nails	Sq.m m.	1.00 4.05 Approx				
	d. Glass thickness 6mm.	Sq. m	skill unskl	m-day m-day	0.06 0.006	Glass 6mm Timber beds nails	Sq.m m.	1.00 4.05 Approx				
	12. Fixing 3mm. commercial plywood in frame using timber beads (listl)	Sq. m	skll unskl	m-day m-day	0.06 0.006	Plywood 3mm. Timber beds	Sq.m m.	1.05 4.05				
	13. Fixing 3mm. asbestos plain sheet in frame using timber beads (listl)	Sq. m	skill unskl	m-day m-day	0.06 0.006	Asbestos sheet Timber beds Nails	Sq.m m.	1.05 4.05 Approx				
	14. Making wooden partition wall from frame of size 0.61m x 0.915m. using sal wood of size 38m. x 75mm.& attaching 3mm. com. plywood one both sides incl. covering of the joints by timber beads.											
	a. Preparation wall size 9.75m x 3.65m.	each	skill unskl	m-day m-day	23.00 2.30	sal wood timber Plywood 3mm. Beads Nails	cu.m Sq.m m	0.35 75.00 Approx Approx				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
10.	14. b. Preparation wall of 3mm. asbestos plain seet & 9.75m x 3.65m.	each	skill unskl	m-day m-day	23.00 2.30	sal wood timber Asbestos 3mm. Beads Nails	 cu.m Sq.m m	 0.34 75.00 Approx Approx				
	c. Preparation of wall of 12mm. hardboard and size 9.75m x 3.65m.	each	skill unskl	m-day m-day	23.00 2.30	sal wood timber Asbestos 3mm. Beads Nails	 cu.m Sq.m m	 0.34 75.00 Approx Approx				
	15. Making wooden partition wall from frame of size 0.61m. x 0.915m. using sal wood of size 38mm. x 75mm & attaching 19mm. sal planks on both sides incl.covering of the joints by timber beads. partition wall size 9.75m x 3.65m.	each	skill unskl	m-day m-day	23.00 3.00	sal wood timber. Beads Nails	 cu.m m. 	 1.767 Approx Approx				
	16. Making various types of flush ceiling using sal wood frame of size 600mm. x 900mm. made from sal wood of size 50 x75mm. celing size 9.75mm x 3.65mm.											
	a. Using 3mm. Commercial plywood	each	skill unskl	m-day m-day	23.00 2.30	sal wood plywood 3mm. Beads Nails	cu.m Sq.m 	0.45 37.50 Approx Approx				
	b. Using 3mm. asbestos plainsheet	each	skill unskl	m-day m-day	23.0 2.30	sal wood Asbestos 3mm. Beads Nails	Cu.m Sq.m 	0.45 37.50 Aprox Aprox				
	c.Using 12mm. hardboard	each	skill unskl	m-day m-day	23.0 2.30	Salwood H-board 12mm Beads Nails	Cu.m Sq.m 	0.45 37.50 Aprox Aprox				H=Hard

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
10.	17. Making main beam, cross beam etc. from sal wood and fitting.	Cu.m	skill unskl	m-day m-day	17.65 1.76	Sal wood Nails	cu.m	1.05 Aprox				Applicable up to 9m span
	18. Making truss of sal wood and fitting.	10 Cu.m	skill unskl	m-day m-day	17.65 26.00	Sal wood iron strap Nut-bolt Nails	cu.m	1.05 Aprox Aprox Aprox				
	19. Making 25mm. sal wood eaves- board & fitting.	10 Sq.m	skill unskl	m-day m-day	1.43 0.143	Sal woods Nails	c.m	0.275 Aprox				
	20. General labour needs for doors, windows & their fixtures											
	a. Frame	Cu.m	skill unskl	m-day m-day	3.40 3.40							
	b. Shutter	Cu.m	skill unskl	m-day m-day	66.36 6.63							
	c. Plywood	Sq.m	skill unskl	m-day m-day	1.108 0.011							
	d. Glass	Sq.m	skill unskl	m-day m-day	0.108 0.011							
	e. Hinges	sq.m	skill	m-day	0.08							
	f.Handle	sq.m	skill	m-day	0.10							
	g. Bolt 300mm.	sq.m	skill	m-day	0.04							
	h. Mortise Lock	sq.m	skill	m-day	0.67							
	i. Tower bolt	sq.m	skill	m-day	0.17							
	j. Door closer – hydraulic	sq.m	skill	m-day	0.25							
	– Spring	sq.m	skill	m-day	0.10							
	k. Beads	sq.m	skill	m-day	0.033							
	21. Cutting 16-20 mm. dia. steel bars & fitting in window frame incl. boring holes in frame	Kg.	skill unskl	m-day m-day	20.00 20.00	Steel rods	Kg.	1.05				

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
10.	22. Sawing timber logs incl. loading, unloading, sawing, hauling & piling											Measure four sides if beam & measure one side if planks
	a. Dry timber sawing	sq.m	skill unskl	m-day "	0.50 0.166							
	b. Wet timber sawing	sq.m	skill unskl	m-day "	0.625 0.208							
	23. Making column of 3-4m long round or square timber logs striping by axe and sommthing by jack plane incl. boring holes	Nr.	skill unskl	m-day "	1.785 0.595							
	24. Plain by axe and plain by jack and boring hole.	Nr.	skill unskl	m-day "	3.00 1.00							
	25. Making 5m long staircase from timber logs incl. striping four sides, smoothing by jack plane, boring holes and fitting.	Nr.	skill unskl	m-day "	12.00 4.00							
	26. Smoothing planks by jack plane & making all of equal width.	Nr.	skill unskl	m-day "	0.135 0.45							
	27. Making square from 4-5m. long timber log by axe and fitting.	Nr.	skill unskl	m-day "	0.975 0.325							

11. Flooring works

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
11	1. 1:2:4 cement concrete floor casting incl. finishing by cement rubbing.											
	a. Floor thickness 25mm.	10 Sq.m	Skill unskl	m-day m-day	1.10 1.50	Cement sand aggrts. 12mm.	M.T. Cu.m Cu.m	0.09 0.12 0.23				
	b. . Floor thickness 38mm	10 Sq.m	Skill unskl	m-day m-day	1.25 2.00	Cement sand aggrts. 12mm	M.T. Cu.m Cu.m	0.13 0.18 0.36				
	c. . Floor thickness 50mm	10 Sq.m	Skill unskl	m-day m-day	1.25 2.5	Cement sand aggrts. 12mm	M.T. Cu.m Cu.m	0.17 0.23 0.46				
	d. . Floor thickness 75mm	10 Sq.m	Skill unskl	m-day m-day	1.25 3.0	Cement sand aggrts. 12mm	M.T. Cu.m Cu.m	0.26 0.34 0.68				
	2. 25mm. thick mosaic flooring with 20mm. thick 1:2:4 cement concrete base course & 5mm. thick 1:1 white cement & marble chips surface course incl. finish by rubbing and polishing	10 Sq.m	Skill unskl	m-day m-day	3.25 16.00	Cement sand aggrts. 12.5mm whit cement Marble chips 3m Oxidiser powder wax ploish Tarpent.. Carbor.	M.T. Cu.m Cu.m M.T. Cu.m Kg. Kg. L.t	0.065 0.088 0.176 0.061 0.061 0.365 0.118 0.538 Approx				(Oxalic Acid) (Tarpentine) (Carborandum)
	3. 25mm thick mosaic flooring with 19mm. thick cement concrete plaster (1:2) base course & 6mm. thick marble chips white cement (1:1) surface course incl. rubbing and polishing	10 Sq.m	Skill unskl	m-day m-day	3.50 36.00	Cement sand whit cement Marble chips 3m Oxalic acid wax ploish Tarpent.. Carbor Slone	M.T. Cu.m M.T. Cu.m Kg. Kg. L.t	0.121 0.165 0.069 0.047 0.34 0.11 0.50 Approx				

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
11.	4. 20mm thick (3/4") mosaic flooring with 13.5mm thick cement plaster (1:2) base course and 6.5mm thick marble chips white cement (1:1) surface course including rubbing and polishing	10 sq.m	skill unskl	m-day "	3.50 36.0	Cement Sand White cement Mrarble chips 3mm Oxalic acid Wax polish Tarpentine Carbor. Stone	Mt. Cu.m Mt. Cu.m Kg. Kg. Lt.	0.089 0.122 0.061 0.089 0.37 0.118 0.538 Aprox				
	5. 20mm thick terrazo tiles flooring on 20mm thick 1:4 cement sand mortar incl. rubbing and plastering	10 sq.m	skill unskl	m-day "	2.00 12.6	T-tiles 20mm Cement Sand Oxalic acid powder Wax polish Tarpentine Carbor. Stone	Sq.m Mt. Cu.m Kg. Kg. Lt.	11.00 0.081 0.22 0.37 0.118 0.538 Aprox	Rub machine	Hr.	6.0	For no machine, add 13.5 m-days of unskilled labour
	6. 25mm thick marble of size 450mm X 450mm on 20mm thick surkhi mortar incl. rubbing and polishing	10 sq.m	skill unskl	m-day "	2.00 8.00	Marble 25mm Surkhi Lime Oxalic acid Wax polish Tarpentine Carbor. Stone	Sq.m Cu.m Cu.m Kg. Kg. Lt.	11.00 0.183 0.091 0.37 0.118 0.538 Aprox	Rub machine	Hr.	6.0	For no machine, add 13.5 m-days of unskilled labour
	7. Porcelain glazed tiles flooring in 1:4 cement sand mortar	10 sq.m	skill unskl	m-day "	13.0 4.50	P.G. tile Cement Sand White cement	Sq.m Mt. Cu.m Cu.m	11.00 0.056 0.152 3.228				
	8. 50mm thick flagstone flooring on 1:4 cement sand mortar	10 sq.m	skill unskl	m-day "	2.00 4.50	F-stone 50mm Cement sand	Sq.m Mt. Cu.m	11.00 0.063 0.171				
	9. Flagstone (Up to thickness 50mm) flooring on sand	10 sq.m	skill unskl	m-day "	1.00 3.00	Stone Sand	Sq.m Cu.m	11.00 0.71				
	10. Flooring of flagstone having thickness of 37.5mm 1:4 cement sand mortar	10 sq.m	skill unskl	m-day "	2.00 4.50	Stone 37.5mm Cement Sand	Sq.m Mt. Cu.	11.00 0.06 0.165				

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
11.	11. 20mm thick flat stone flooring on 1:4 cement sand mortar	10 sq.m	skill unskl	m-day ,,	1.50 4.50	Stone 20mm Cement sand	Sq.m Mt. Cu.m	11.00 0.056 0.152				
	12. 25mm thick dense brick on 1:2 lime surkhi mortar with 1:1 cement sand mortar pointing.	10 sq.m	skill unskl	m-day ,,	4.50 4.50	Densed bricks Lime surkhi Cement Sand	Nr. Cu.m Cu.m Mt. Cu.m	440.0 0.122 0.244 0.016 0.11				
	13. Flat brick flooring on sand with 1:2 cement sand mortar pointing in joints.	10 sq.m	skill unskl	m-day ,,	2.25 3.25	Brick Cement Sand	Nr. Mt. Cu.m	430.0 0.078 0.229				
	14. Brick on edge flooring on 1:6 cement sand mortar with 1:2 cement sand mortar pointing at joints.	10 sq.m	skill unskl	m-day ,,	1.1 1.8	Brick Cement Sand	Nr. Mt. Cu.m	750.0 0.121 0.431				
	15. Laying parquet floor, sandpaper rubbing and polishing.	10 sq.m	skill unskl	m-day ,,	1.75 0.75	Parquet Sand Paper Wax polish	Sq.m	10.50 Aprox Aprox				
	16. Dry brick laying a. flat	10 sq.m	skill unskl	m-day ,,	0.50 1.00	Brick Sand	Nr. Cu.m	420.0 0.71				
	b. on edge	10 sq.m	skill unskl	m-day ,,	1.00 3.25	Brick Sand	Nr. Cu.m	750.0 0.71				
	17. Dry stone laying	10 sq.m	skill unskl	m-day ,,	1.00 3.50	Stone Sand	Cu.m Cu.m	1.10 0.71				
	18. 125mm thick on edge soiling of bricks incl. filling sand in joints and flush pointing on the top surface of the joint by 1:3 cement sand mortar.	10 sq.m	skill unskl	m-day ,,	2.00 4.00	Cement Bricks Sand	Mt. Nr. Cu.m	0.02 750.0 0.10				
	19. 1:1 cement sand mortar pointing on joints of stone pavement works (stone size is 46cm X 46cm)	10 sq.m	skill unskl	m-day ,,	0.50 0.50	Cement Sand	kg. Cu.m	4.20 0.003				

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
11	20. Filling works a. By sand	10 sq.m	skill	m-day	6.50	Sand	Cu.m	11.00				Sprinkling water & ramming by rammer
	b. 15-150cm brick bats	10 sq.m	skill	m-day	10.0	Brick bats	Cu.m	11.00				
	21. 3mm thick fine cement rubbing works	10 sq.m	skill unskl	m-day "	1.00 1.00	Cement	kg	53.20				
	22. Laying 600mm X 600mm sal timber frames made from 50mm X 75mm sal timber and fixing 25mm thick sal timber planks on top surface as timber floor.	10 sq.m	skill unskl	m-day "	6.50 0.65	Sal wood Nails	Cu.m	0.421 Aprox				

12. Plastering works

S. N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
1 2.	1. 12.5mm thick cement sand plastering works											
	a. 1 : 2 ratio	100 sq.m	skill unskl	m-day ,,	12.0 16.0	Cement Sand	Mt. Cu.m	0.90 1.22				Add 25% more labour for ceiling plaster wolks
	b. 1 : 3 ratio	100 sq.m	skill unskl	m-day ,,	12.0 16.0	Cement Sand	Mt. Cu.m	0.625 1.28				
	c 1 : 4 ratio	100 sq.m	skill unskl	m-day ,,	12.0 16.0	Cement Sand	Mt. Cu.m	0.538 1.46				
	d. 1 : 6 ratio	100 sq.m	skill unskl	m-day ,,	12.0 16.0	Cement Sand	Mt. Cu.m	0.382 1.57				
	2. 10.5mm thick cement, lime and sand plastering works											
	a. 1 : 2 : 12 ratio	100 sq.m	skill unskl	m-day ,,	12.0 16.0	Cement Lime Sand	Mt. Cu.m Cu.m	0.338 0.23 1.37				
	b. 1 : 2 : 6 ratio	100 sq.m	skill unskl	m-day ,,	12.0 16.0	Cement Lime Sand	Mt. Cu.m Cu.m	0.18 0.24 1.46				
	3. 12.5mm thick cement lime surkhi plastering works in 1 : 2 ratio	100 sq.m	skill unskl	m-day ,,	12.0 16.0	Lime Surkhi	Cu.m Cu.m	0.61 1.22				
	4. 20mm thick cement sand plaster											
	a. 1 : 3 ratio	100 sq.m	skill unskl	m-day ,,	14.0 19.0	Sand Cement	Cu.m Mt.	1.95 0.96				
	b. 1 : 4 ratio	100 sq.m	skill unskl	m-day ,,	14.0 19.0	Sand Cement	Cu.m Mt.	2.20 0.81				
	c. 1 : 6 ratio	100 sq.m	skill unskl	m-day ,,	14.0 19.0	Sand Cement	Cu.m Mt.	2.35 0.57				
	5. 2.5cm thick mud plaster works incl. mud preparation, hauling up to 30mt. distance, cleaning and soaking plastering surface by water	100 sq.m	skill unskl	m-day ,,	20.0 25.0	Soils Grain cells Cow dungs	Cu.m Kg. Kg.	3.00 10.00 120.0				
	6. 12mm thick mud plastering works in walls incl. mud mortar preparation, hauling up to 30m dist., cleaning and soaking plastering by water.	100 sq.m	skill unskl	m-day ,,	16.0 20.0	Soils Grain cells Cow dungs	Cu.m Kg. Kg.	1.50 50.00 60.00				

13. Painting works.

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
13	1. Whitewashing (new surface)											
	a. One coat	100 Sq.m	skill unskl	m-day ,,	1.80 0.50	While lime Gum, etc.	Kg. Kg	12.00 0.48				
	b. Two coat	100 Sq.m	skill unskl	m-day ,,	1.50 1.10	While lime Gum, etc.	Kg. Kg	22.00 0.88				
	C. Three coat	100 Sq.m	skill usnkl	m-day ,,	3.50 2.70	While lime Gum, etc.	Kg. Kg	32.00 1.28				
	2. Whitewashing (old surface)	100 Sq.m	skill unskl	m-day ,,	0.80 0.70	While lime Gum, etc.	Kg. Kg.	10.00 0.40				
	3. Distemper paint works											
	a. Base coat (lining)	100 Sq.m	skill unskl	m-day ,,	2.00 2.00	Lining	Lt.	8.00				
	b. One coat	100 Sq.m	skill unskl	m-day ,,	2.00 2.00	Dry Distem. powder	Kg.	6.50				
	c. Second coat and additional coats.	100 Sq.m	skill unskl	m-day ,,	1.80 1.80	Dry Distem. powder	Kg.	5.00				
	4. Waterproof cement paint application											
	a. One coat	100 Sq.m	skill unskl	m-day ,,	1.70 1.70	Waterproof cement paint	kg	30.00				
	b. Two coats	100 Sq.m	skill unskl	m-day ,,	5.00 5.00	Waterproof cement paint	kg	48.50				
	5. Prepared enamel paint or prepared plastic emulsion paint application											
	a. Base or lining coat	100 Sq.m	skill unskl	m-day ,,	3.00 3.00	Lining	Lt.	8.10				
	b. First coat	100 Sq.m	skill unskl	m-day ,,	5.00 2.00	Prepared paint	Lt.	9.00				
	c. Second coat	100 Sq.m	skill unskl	m-day ,,	4.00 3.00	Prepared paint	Lt.	7.00				
	6. Two coat of prepared aluminium paint application in addition to one base or lining coat.	100 Sq.m	skill unskl	m-day ,,	10.75 10.75	Primer (lining) allum. paint Sand paper (sheet)	Lt. Lt. Nr.	8.10 10.76 4.00				
	7. Deleted by 1993 revision											

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
13.	8. Double boiled linseed oil application.											
	a. Single coat	100 Sq.m	skill unskl	m-day ,,	2.00 2.00	Linseed oil	Lt.	6.00				
	b. Second & additional coats	100 Sq.m	skill unskl	m-day ,,	2.00 2.00	Linseed oil	Lt.	5.00				
	9. Varnish application											
	a. Single coat	100 Sq.m	skill usrkl	m-day ,,	3.00 2.00	Varnesh	Lt.	6.00				
	b. Secong & additional coats	100 Sq.m	skill unskl	m-day ,,	3.00 2.00	Varnesh	Lt.	5.00				
	10. Bitumen paint application											
	a. one coat	100 Sq.m	skill unskl	m-day ,,	1.5 1.0	Bitumen Paint	Lt.	7.00				
	b. Two coats	100 Sq.m	skill unskl	m-day ,,	2.50 2.0	Bitumen Paint	Lt.	12.00				
	11. Three coat chapra (resin) polish application work.	100 Sq.m	skill unskl	m-day ,,	10.00 5.00	Chapra (resin) Sprit	Kg. Lt.	2.00 10.00				
	12. Painting works of plastered surface by cement paint											
	a. First coat	100 Sq.m	skill unskl	m-day ,,	3.50 3.50	Snowcem	Kg.	30.00				
	b. Second coat	100 Sq.m	skill unskl	m-day ,,	3.00 3.00	Snowcem	Kg.	20.00				

14. Pointing works.

S. N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
14	1. Flush pointing in brick masonary											
	a. Cement sand 1:1	100 Sq.m	skill unskl	m-day m-day	10.5 12.00	Cement Sand	M.T Cu.m	0.316 0.22				Add 50% more labours for ruled pointing
	b. Cement sand 1:2	100 Sq.m	skill unskl	m-day m-day	10.5 12.00	Cement Sand	M.T Cu.m	0.21 0.29				
	c. Cement sand 1:3	100 Sq.m	skill unskl	m-day m-day	10.5 12.00	Cement Sand	M.T Cu.m	0.155 0.32				
	d. Cement lime & sand 1:1:3	100 Sq.m	skill unskl	m-day m-day	10.5 12.00	Cement lime Sand	M.T Cu.m Cu.m	0.125 0.085 0.255				
	e. Lime surkhi 1:1	100 Sq.m	skill unskl	m-day m-day	10.5 12.00	Lime Surkhi	Cu.m Cu.m	0.22 0.22				
	f. Lime surkhi 1:2	100 Sq.m	skill unskl	m-day m-day	10.5 12.00	Lime Surkhi	Cu.m Cu.m	0.15 0.29				
	2. Flush ruled pointing works in boulder stone masonry wall.											
	a. Cement sand 1:1	100 Sq.m	skill unskl	m-day m-day	10.00 14.00	Cement Sand	M.T Cu.m	0.612 0.43				
	b. Cement sand 1:2	100 Sq.m	skill unskl	m-day m-day	10.00 14.00	Cement Sand	M.T Cu.m	0.408 0.57				
	c. Cement sand 1:3	100 Sq.m	skill unskl	m-day m-day	10.00 14.00	Cement Sand	M.T Cu.m	0.306 0.63				
	3. Flush rule pointing in asler masonry works using 1:3 cement sand mortar	100 Sq.m	skill unskl	m-day m-day	8.00 10.00	Cement Sand	M.T Cu.m	0.11 0.20				
	4. 1:3 cement sand pointing on flat stone pavement works (stone size 45 cm. X 45cm.)	100 Sq.m	skill unskl	m-day m-day	5.00 5.00	Cement Sand	M.T Cu.m	0.042 0.03				
	5. 1:1 cement sand pointing or dense brick pavement	100 Sq.m	skill unskl	m-day m-day	10.00 10.00	Cement Sand	M.T Cu.m	0.15 0.10				
	6. 3mm. flushing plaster using 1:1 cement sand mortar.	100 Sq.m	skill unskl	m-day m-day	10.00 10.00	Cement Sand	M.T Cu.m	0.336 0.23				
	7. 3mm. flushing plaster using lime	100 Sq.m	skill unskl	m-day m-day	10.00 10.00	Cement Sand	M.T Cu.m	0.16				
	8. 3mm. flushing plaster using cement	100 Sq.m	skill unskl	m-day m-day	10.00 10.00	Cement Sand	M.T	0.518				

15. Road works.

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	1. Making road side ditch from rubble stone masonry and cement sand mortar incl. supply of materials, preparing mortar & hauling up to 30 m.											
	a. Cement masonry 1:3	Cu.m	Skill	m-day	1.50	Cement	M.T	0.194				
			Unskl	m-day	4.80	Sand	Cu.m	0.42				
						Blockstone	Cu.m	1.00				
						Bondstone	Cu.m	0.10				
	b. Cement masonry 1:4	Cu.m	Skill	m-day	1.50	Cement	M.T	0.159				
			Unskl	m-day	4.80	Sand	Cu.m	0.45				
						Blockstone	Cu.m	1.00				
						Bondstone	Cu.m	0.10				
	c. Cement masonry 1:6	Cu.m	Skill	m-day	1.50	Cement	M.T	0.106				
			Unskl	m-day	4.80	Sand	Cu.m	0.47				
						Blockstone	Cu.m	1.00				
						Bondstone	Cu.m	0.10				
	2. Making road side ditch form dry rubble masonry incl. haulage up to 30m. distance	Cu.m	Skill	m-day	0.47	Blockstone	Cu.m	1.00				
			Unskl	m-day	4.25	Bondstone	Cu.m	0.10				
	3. Cleaning sub-grade by cutting grass, hauling and removing up to 10m. distance from const. site.	Sq.m	Unskl	m-day	0.05							
	4. Sub -grade preaparation by cutting common soils hauling and removing upto 10 m. away form the const. site.											
	a. Up to 10 cm. depth	Sq.m	Unskl	m-day	0.12							
	b. Up to 20 cm depth	Sq.m	Unskl	m-day	0.18							
	c. Up to 30 cm depth	Sq.m	Unskl	m-day	0.24							
	5. Sub grade preparation by cutting stone mixed common soils incl. hauling & removal up to 10 m. away form the const. site											
	a. Stone 20%-40% and 10cm. deep	Sq.m	Unskl	m-day	0.26							
	b. Stone 40%-60% and 10 cm. deep	Sq.m	Unskl	m-day	0.29							
	c. Stone 20%-40% 20 cm. deep	Sq.m	Unskl	m-day	0.36							
	d. Stone 40%-60% and 20 cm. deep	Sq.m	Unskl	m-day	0.41							

S. N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	e. Stone20%-40% and 30 cm. deep	Sq.m	unskl	m-day	0.47							
	f. Stone 40%-60% and 30cm. deep	Sq.m	unskl	m-day	0.53							
	6. Making sub-grade by bringing soils & filling incl. levelling & hauling up to 10m. distance											
	a. Up to 10cm. high	Sq.m	unskl	m-day	0.11							
	b. Up to 20 cm. high	Sq.m	unskl	m-day	0.16							
	c. Up to 30 cm. high	Sq.m	unskl	m-day	0.21							
	7. Rolling filled soils in layers	100 Cu.m							Road roller 8-10 M.t	Hr.	1.67	
	8. Water sprinkling works including hauling up to 10 m. distance	M.T	unskl	m-day	0.50							
	9. Laying sub - base course of sand mixed gravel including loading & transporting mat. levelling surface, & hauling up to 10 m. distance											
	a. 10 cm. solid depth	Sq.m	unskl	m-day	0.15	Gravel	Cu.m	0.128	Road roller 8-10 M.T.	Hr.	0.009	
	b. 12.5 cm. solid depth	Sq.m	unskl	m-day	0.17	"	"	0.16	"	"	0.011	
	c. 15 cm. solid depth	Sq.m	unskl	m-day	0.19	"	"	0.192	"	"	0.013	
	d. 20 cm. solid depth	Sq.m	unskl	m-day	0.21	"	"	0.256	"	"	0.018	
	e. 25 cm. solid depth	Sq.m	unskl	m-day	0.30	"	"	0.32	"	"	0.023	
	f. 30 cm. solid depth	Sq.m	unskl	m-day	0.35	"	"	0.384	"	"	0.028	
	g. 40 cm. solid depth	Sq.m	unskl	m-day	0.45	"	"	0.512	"	"	0.038	

S. N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	10. Laying sub-grade of broken stones or required size gravel incl. loading & transporting materials, surface levelling & hauling up to 10 m. distance in the const. site											
	a. 10 cm. solid thickness	Sq. m	unskl	m-day	0.14	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.1352 0.042 0.01	Road roller 8 -10M.T	Hr.	0.028	
	b. 15 cm. solid thickness	Sq.m	unskl	m-day	0.21	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.2025 0.063 0.015	"	"	0.042	
	c. 25 cm. solid thickness	Sq.m	unskl	m-day	0.32	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.3375 0.105 0.025	Road roller 8 -10M.T	"	0.07	
	11. Rolling by road roller of 8-10 M.T								Road roller 8 -10M.T	Hr.	3.00	
	a. Sub-base course	100 Cu.m										
	b. Base course	"							"	"	4.00	
	12 1. Laying base course of broken stone, sand and clay (clay bound macadam) incl. arranging stone in layers, spreading clay & hauling up to 10 m. distance (etc.)											
	a. 6 cm. solid thickness	Sq.m	unskl	m-day	0.10	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.0794 0.0164 0.0072	Road roller 8 -10M.T	Hr.	0.0024	
	b. 7.5 cm. solid thickness	sq.m	unskl	m-day	0.12	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.10 0.12 0.009	"	"	0.003	

S. N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	c. 8 cm solid thickness	Sq. m	Unskl	m-day	0.13	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.1067 0.0213 0.0096	Road roller 8 -10M.T	Hr	0.032	
	d. 10 cm solid thickness	Sq.m	Unskl	m-day	0.16	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.1333 0.0266 0.012	"	"	0.004	
	e. 12 cm solid thickness	Sq.m	Unskl	m-day	0.18	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.16 0.03 0.0144	"	"	0.048	
	f. 14 cm solid thickness	Sq.m	unskl	m-day	0.32	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.1866 0.0373 0.0168	"	"	0.056	
	g. 15 cm solid thickness	Sq.m	Unskl	m-day	0.23	Coarse aggrts. Scrng. binding mat	Cu.m Cu.m Cu.m	0.20 0.04 0.018	"	Hr	0.006	
	12.2. Mixing stone dust in broken stones & laying them incl. arranging stones in layers, spreading stone dust & hauling up to 10m. distance (Stone dust bound macadam)											
	a. 6 cm. solid thickness	sq.m	Unskl	m-day	0.10	Coarse aggrts. Stone dust	Cu.m Cu.m	0.0794 0.016	Road roller 8 -10M.T	Hr	0.0024	
	b. 8cm. solid thickness	sq.m	Unskl	m-day	0.13	Coarse aggrts. Stone dust	Cu.m Cu.m	0.1067 0.0213	"	"	0.0032	
	c. 8 cm solid thickness	sq.m	unskl	m-day	0.15	Coarse aggrts. Stone dust	Cu.m Cu.m	0.1333 0.0266	"	"	0.004	
	d. 12cm solid thickness	sq.m	unskl	m-day	0.18	Coarse aggrts. Stone dust	Cu.m Cu.m	0.16 0.032	"	"	0.0048	

S. N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	12.2 e. 14cm. solid thickness	sq.m	unskl	m-day	0.21	Coarse aggrts. Stone dust	Cu.m Cu.m	0.1866 0.0373	Road roller 8 -10M.T	Hr	0.0056	
	f. 15cm. solid thickness	sq.m	unskl	m-day	0.23	Coarse aggrts. Stone dust	Cu.m Cu.m	0.20 0.04	"	"	0.006	
	13. Laying base course of solid thickness of broken stones incl. surface levelling & hauling upto 10m. thickness											
	a. 7.5cm. thickness	sq.m	unskl	m-day	0.12	Broken stone 50mm.	Cu.m	0.10	"	"	0.003	
	b. 10cm. thickness	sq.m	unskl	m-day	0.15	Broken stone 50mm	Cu.m	0.148	"	"	0.004	
	14. Laying wearing course of sand clay mixture on the top surface of clay bound macadam incl. surface levelling, water sprinkling & hauling up the 10m. distance.	sq.m	unskl	m-day	0.035							
	15. Stone edging works incl. adjustment of line, excavation of footing 7 hauling up to 10m. distance	m	unskl	m-day	0.15							
	16. Cleaning top surface by wire brush & broom before pitching											
	a. on water bound macadam	10 sq.m	unskl	m-day	0.25							
	b. on other road surface	10 sq.m	unskl	m-day	0.20							
	17. Tack coat application incl. supply of materials											
	a. on old pitch surface	10 sq.m	unskl	m-day	0.20	Bitumen Kerosene Firewood - -	Kg. Lt. kg. kg.	7.30 aprox 3.00 12.00	B-ler S-ler	Hr	0.04	(Boiler) In Boiler In Mass work (Open furnace)
						-	kg.	18.00				In patch work (Open furnace)

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	17. b. On base course	10 Sq.m	Unskl	m-day	0.20	Bitumen	Kg.	12.20	B-ler	Hr		
						Kerosene	Lt.	Approx	S-ler	Hr		
						Firewood						
						-	Kg.	5.00				In Boiler
						-	Kg.	20.00				In Mass work (Open furnace)
						-	Kg.	30.00				In patch work (Open furnace)
	18. Applying priming coat incl. supply of materials.											
	a. On old pitch surface	10 Sq.m	Unskl	m-day	0.20	Bitumen	Kg.	4.90	B-ler	Hr	0.04	
						Kerosene	Lt.	Approx	S-ler	Hr	-	
						Firewood						
						-	Kg.	2.00				In Boiler
						-	Kg.	8.00				In Mass work (Open furnace)
						-	Kg.	12.00				In patch work (Open furnace)
	b. On base course	10 Sq.m	Unskl	m-day	0.20	Bitumen	Kg.	9.75	B-ler	Hr	0.04	
						Kerosene	Lt.	Approx	S-ler	Hr	-	
						Firewood						
						-	Kg.	4.00				In Boiler
						-	Kg.	16.00				In Mass work (Open furnace)
						-	Kg.	24.00				In patch work (Open furnace)
	19. One coat surface dressing including compaction	10 Sq.m	Unskl	m-day	0.45	Bitumen	Kg.	20.00	B-ler	Hr	0.04	
						Kerosene	Lt.	Approx	S-ler	Hr	-	
						Firewood			R-ler	Hr	0.04	(Roller)
						-	Kg.	8.00				In Boiler
						-	kg	32.00				In Mass work (Open furnace)
						-	Kg.	48.00				In patch work (Open furnace)
						Aggrts. 12mm.	cu.m	0.15				
	20. Two coat surface dressing including compaction.	10 Sq.m	unskl	m-day	0.80	Bitumen	Kg.	34.00	B-ler	Hr	0.07	
						Kerosene	Lt.	Approx	S-ler	Hr	-	
						Firewood			R-ler	Hr	0.07	
						-	Kg.	13.00				In Boiler
						-	Kg.	52.00				In Mass work (Open furnace)
						-	Kg.	78.00				In patch work (Open furnace
						Aggrts. 12mm	cu.m	0.18				
						10mm.	cu.m	0.10				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty	Type	Unit	Qtty	Type	Unit	Qty	
15	21. Semigrouting work incl. compaction											If specification mention 50Kg. bitumen, then adopt 50kg. here too, Same rule is applicable for wood also
	a. 5cm. thickness	10 Sq.m	Unskl	m-day	1.20	Bitumen	Kg.	35.00	B-ler	Hr	0.07	
						Kerosene	Lt.	Aprox	S-ler	Hr	-	
						Fuelwood			Spyer	Hr	0.07	
						B-ler	Kg.	12.00				
						Masswork	Kg.	48.00				
						Patchwork	Kg.	72.00				
						Stone aggrts						
						38mm.	Cu.m	0.60				
						12mm.	Cu.m	0.15				
	b. 10cm. thickness	10 Sq.m	Unskl	m-day	2.00	Bitumen	Kg.	60.00	B-ler	Hr	0.07	
						Kerosene	Lt.	Aprox	S-ler	Hr	-	
						Fuelwood			Spyer	Hr	-	
						B-ler	Kg.	18.00				
						Masswork	Kg.	72.00				
						Patchwork	Kg.	108.0				
						Stone aggrts						
						38mm.	Cu.m	1.20				
						12mm.	Cu.m	0.30				
	22. 5cm. thick bridge grouting works incl. compaction	10 Sq.m	Unskl	m-day	1.20	Bitumen	Kg.	50.00	B-ler	Hr	0.07	
						Kerosene	Lt.	Aprox	S-ler	Hr	-	
						Fuelwood			Spyer	Hr	-	
						B-ler	Kg.	20.00				
						Masswork	Kg.	80.00				
						Patchwork	Kg.	120.0				
						Stone aggrts						
						38mm.	Cu.m	0.60				
						12mm.	Cu.m	0.15				
	23. 1. Seal coat works incl. compaction	10 Sq.m	Unskl	m-day	0.45	Bitumen	Kg.	15.00	B-ler	Hr	0.04	
						Kerosene	Lt.	Aprox	S-ler	Hr	-	
						Fuelwood			Spyer	Hr	0.04	
						B-ler	Kg.	6.00				
						Masswork	Kg.	24.00				(In open furnace)
						Patchwork	Kg.	36.00				(In open furnace)
						Stone aggrts.						
						6mm.	Cu.m	0.12				
	23. 2. Seal coat works with coarse sand incl. compaction	10 Sq.m	Unskl	m-day	0.45	Cutback Bitumen			B-ler	Hr	0.04	
									S-ler	Hr	-	
						Cheese	Kg.	9.60	Spyer	Hr	0.04	
						Kerosene	Lt.	Aprox				
						Fuelwood						
						B-Ler	Kg	4.00				
						Masswork	Kg	16.00				(In open furnace)
						Patchwork	Kg	24.00				(In open furnace)
						Coarse sand	Cu.m	0.07				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	24. 1 40mm. thick premix asphalt concerning works incl. compaction	10 Sq.m	unskl	m-day	1.00	Cutback bitumen						Depending upon the spec..design, local condition & environment there will be few changes in the quantity of the const.. materials
						cheese	Kg.	46.00	R-ler	Hr	0.11	
						Kerosene	Lt.	Aprox	B-ler	Hr	-	
						Firewood:			Spyer	Hr	-	
						B-ler	Kg.	18.00	Mixer	Hr	-	
						Masswork	Kg.	72.00				(In open furnace)
						Patchwork	Kg.	108.0				(In open furnace)
						Coarse sand	Cu.m	0.19				
						Aggrts. 20mm.	Cu.m	0.23				
						12mm.	Cu.m	0.15				
	24. 2 20mm. thick pre-mix carpeting works incl. compactiong.	10 Sq.m	Unskl	m-day	0.90	Cutback bitumen	Kg.	15.40	R-ler	Hr	0.10	
						Kerosene	Lt.	Aprox	B-ler			
						Firewood:			Spyer	Hr	0.10	
						B-ler	Kg.	6.00				
						Masswork	Kg.	24.00				(In open furnace)
						Patchwork	Kg.	36.00				(In open furnace)
	25. Edging works including adjustment of line, levelling, making tench by excavating soils or pitched road, piling bricks in order, filling both sides of edging by soils and bench - compaction works compelete.											
	a. Edging by bricks erected on sides (125mm. high))	R.m.	Unskl	m-day	0.05	Brick	Nr.	5.00				(Running metre)
	b. Edging by bricks erected on sides (250mm. high)	R.m.	Unskl	m-day	0.10	Brick	Nr.	17.00				
	c. Edging by stones (100mm. wide and 125mm. deep)	R.m	Unskl	m-day	0.08	Stone	Cu.m	0.0125				
	d. Edging by stones (100mm. deep and 250mm. high)	R.m.	Unskl	m-day	0.15	Stone	Cu.m	0.025				
	26. Brick soling works, incl. preparing floor, filling brick joints by local sand or soil dust with compaction, putting flexible soils or similar mat. beneath bricks etc. complete.											

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty	Type	Unit	Qtty	Type	Unit	Qty	
15	26. a Brick flat soling	Sq.m	Skill	m-day	0.05	Brick	Nr.	41.00				
			unskl	m-day	0.05	Sand	Cu.m	0.025				
	b. One by one brick soling by erecting on sides	Sq.m	Skill	m-day	0.08	Brick	Nr.	75.00				
			unskl	m-day	0.08	Sand	Cu.m	0.02				
	27. Brick pavement work incl. filling cement mortar (1:6) in joints & sttaching them close by close											
	a. One by one brick flat pavement	Sq.m	Skill	m-day	0.10	Bricks	Nr.	41.00				
			unskl	m-day	0.20	Cement	Kg.	4.98				
						Sand	Cu.m	0.02				
	b. One by one brick flat pavement works erected side	Cu.m	Skill	m-day	0.15	Bricks	Nr.	75.00				
			unskl	m-day	0.30	Cement	Kg.	7.25				
						Sand	Cu.m	0.03				
	28. Iron works in bridges etc. a. Cutting, lifting, and erection of sections or by trusses built by reveting or bolting complete											
	- R.S. joists sections or trusses	M.T.	Skill	m-day	6.80							
			unskl	m-day	12.00							
	- Tee, Angles, Flats or trusses	M.T.	Skill	m-day	16.00							
			unskl	m-day	24.00							
	b. Ereeting in place lifting and cutting sections or trusses built by welding											
	- R.S joists sections or channels section or trusses	M.T.	Skill	m-day	3.80							
			unskl	m-day	8.00							
	- Tee, Angles, Flats or Channels section	M.T.	Skill	m-day	4.00							
			unskl	m-day	14.00							
	29. Timber works in bridges.											
	a. Fitting timber beam	Cu.m	Skill	m-day	3.50	Nails	Kg.	4.00				
			unskl	m-day	5.00							
	b. Fitting timber truss	Cu.m	Skill	m-day	10.80	Nails	Kg.	16.00				
			Unskl	m-day	5.40							
	c. Fitting timber deck	Cu.m	Skill	m-day	1.66	Nails	Kg.	0.80				
			unskl	m-day	0.50							

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	30. Making wooden forms incl. supply of materials & removal after finishing the work (staging work is not included)											Salvage value of the timber used for forms is assumed 25% after using six times
	a. In foundation footing	10 Sq.m	Skill unskl	m-day m-day	1.25 1.25	Planks Balli & batten Nails	Sq.m Cu.m Kg.	1.00 0.07 1.00				
	b. In column & pair	10 Sq.m	Skill unskl	m-day m-day	2.50 2.00	Planks Balli & batten Nails	Sq.m Cu.m Kg.	10.00 0.45 2.00				
	c. In vertical wall	10 Sq.m	Skill unskl	m-day m-day	2.30 2.00	Planks Balli & batten Nails	Sq.m Cu.m Kg.	10.00 0.36 4.00				
	d. In beam sides & soffit	10 Sq.m	Skill Unskl	m-day m-day	3.00 2.00	Planks Balli & batten Nails	Sq.m Cu.m Kg.	10.00 0.32 4.00				
	e. In hanging floor or roof.	10 Sq.m	Skill Unskl	m-day m-day	2.30 2.00	Planks Balli & batten Nails	Sq.m Cu.m Kg.	10.00 0.90 5.00				Depending on the type of hanging floor or roof, use multplication Nr. given below to multiply the Nr. given above to get labour need as per shape.
	- Battered (close slope)				1.30							
	- Circular big sweep (dia. more than 12m.)				1.50							
	- Cricular tight sweep (dia. less than 12m.)				2.00							
	31. Staging works, supplying staging for works like bridge or culvert super structure incl. fitting in place dismantle and removal after completion of works											To obtain cu.m here, one should multiply the span (length), width, & height of the bridge or culvert.
	a. Up to 9 m. span	Cu.m	Skill unskl	m-day m-day	0.50 0.50							
	b. Up to 15 m. span	Cu.m	Skill unskl	m-day m-day	0.75 0.75							
	c. Up to 30 m. span	Cu.m	Skill unskl	m-day m-day	1.10 1.10							

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
15	31. d. More than 30m. span	Cu.m	Skill unskl	m-day m-day	2.20 2.20							
	32. Unlined drain formation (bed width of drain less or equal to 60cm.)											
	a. In ordinary soil	m.	unskl	m-day	0.15							
	b.In hard soil	m.	unskl	m-day	0.21							
	c.In common soft rock	m.	unskl	m-day	0.68							
	d. In hard rock	m.	unskl	m-day	1.90							
	33. Making v-shaped drain of dry stone of thickness 15cm. to 23 cm. by erecting them in sides (top width of drain is 60cm. & depth is form 30cm. to 50 cm	m.	unskl	m-day	1.00	Stone	Cu.m	Adopt Qtty as per design				
	34. Landslide removal incl. haulage upto 50m. distance.											
	a. Soils	Cu.m	unskl	m-day	0.30							
	b. Stone mixed soils	Cu.m	unskl	m-day	0.65							
	c. Stone-rocks	Cu.m	unskl	m-day	1.06							
	35. Chopping & removing trees of girth between 900 mm. and 1200mm. which are laying under bridges & blocking the flow of water	each	unskl	m-day	1.60							
	36. Demolishing old structure incl. piling useful materials on sides in order removing useless materials away from the site & in both cases hauling up to a distance of 50m.											
	a. Brick masonry in lime mortar or similar	Cu.m	unskl	m-day	0.81							
	b. Brick masonry in cement mortar or similar	Cu.m	unskl	m-day	1.96							
	c. Stone masonry in lime mortar or similar	Cu.m	unskl	m-day	1.10							
	d. Stone masonry in cement mortar or similar	Cu.m	unskl	m-day	2.34							
	e. Brick masonry in mud mortar or similar	Cu.m	unskl	m-day	0.67							

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty	Type	Unit	Qty	Type	Unit	Qty	
15	f. R.B. works	Cu.m	unskl	m-day	3.02							
	g. R.C.C. works	Cu.m	unskl	m-day	3.37							
	h. 1:4:8 or stronger plain concrete	Cu.m	unskl	m-day	1.43							
	i. 1:3:6 or stronger plain concrete	Cu.m	unskl	m-day	2.31							
	j. Lime concrete works	Cu.m	unskl	m-day	0.81							
	37. Construction of 3m. wide service road parallel to canal or road by cutting mounds. filling depressions etc.	1.0 Km.	unskl	m-day	13.00							

16. River Training & Gabion Works.

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
16	1. Making gabion incl. Cutting wire, netting, etc. complete Hexagonal mesh size 80 mm X 100mm Mesh wire- 9 SWG											
	a. Box size 2m. X 1m. X 1m.	Each	Skill	m-day	0.50	G.I.wire	Kg.	36.00				
			unskl	m-day	0.20	Sel. wire	Kg.	3.75				
	b. Box size 3m. X 1m. X 1m.	Each	Skill	m-day	0.70	G.I.wire	Kg.	52.35				
			unskl	m-day	0.28	Sel. wire	Kg.	4.85				
	c. Box size 2m. X 1m. X 0.5m.	Each	Skill	m-day	0.35	G.I.wire	Kg.	24.55				
			unskl	m-day	0.14	Sel. wire	Kg.	3.00				
	d. Box size 3m. X 1m. X 0.5m.	Each	Skill	m-day	0.50	G.I.wire	Kg.	36.00				
			unskl	m-day	0.20	Sel. wire	Kg.	3.90				
	e. Box size 2m. X 1m. X0.3m.	Each	Skill	m-day	0.29	G.I.wire	Kg.	19.95				
			unskl	m-day	0.12	Sel. wire	Kg.	2.65				
	f. Box size 2m. X 1m. X 0.3 m.	Each	Skill	m-day	0.42	G.I.wire	Kg.	29.45				
			unskl	m-day	0.17	Sel. wire	Kg.	3.55				
	2. Making gabion incl. cutting wire, netting, etc. complete. Hexagonal mesh size 80 mm. X 100mm. Mesh wire - 10 SWG Selvedge wire - 8 SWG											
	a. Box size 2m. X 1m. X 1m.	Each	Skill	m-day	0.50	G.I.wire	Kg.	28.40				
			unskl	m-day	0.20	Sel. wire	Kg.	3.15				
	b. Box size 3m. X 1m. X 1m.	Each	Skill	m-day	0.70	G.I.wire	Kg.	41.30				
			unskl	m-day	0.28	Sel. wire	Kg.	4.10				
	c. Box size 2m. X 1m. X 0.5m.	Each	Skill	m-day	0.35	G.I.wire	Kg.	19.40				
			unskl	m-day	0.14	Sel. wire	Kg.	2.50				
	d. Box size 3m.X 1m. X0.5m.	Each	Skill	m-day	0.50	G.I.wire	Kg.	28.40				
			unskl	m-day	0.20	Sel. wire	Kg.	3.30				
	e. Box size 2m. X 1m. X0.3m.	Each	Skill	m-day	0.29	G.I.wire	Kg.	15.75				
			unskl	m-day	0.12	Sel. wire	Kg.	2.25				
	f. Box size 3m.X lm.X 0.3m		Skill	m-day	0.42	G.I.wire	Kg.	23.25				
			unskl	m-day	0.17	Sel. wire	Kg.	3.00				

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
16	3. Making gabion boxes incl. cutting wire & netting etc. Hexagonal mesh size 80 mm X 100mm Mesh wire- 11 SWG Salvedge wire- 8 SWg											
	a. Box size 2m. X 1m. X 1m.	Each	Skill	m-day	0.50	G.I.wire	Kg.	25.55				
			Unskl	m-day	0.20	Sel. wire	Kg.	2.65				
	b. Box size 3m. X 1m. X lm.	Each	Skill	m-day	0.70	G.I.wire	Kg.	34.25				
			Unskl	m-day	0.28	Sel. wire	Kg.	3.40				
	c. Box size 2m. X 1m. X 0.5m.	Each	Skill	m-day	0.35	G.I.wire	Kg.	16.05				
			Unskl	m-day	0.14	Sel. wire	Kg.	2.10				
	d. Box size 3m. X 1m. X 0.5m.	Each	Skill	m-day	0.50	G.I.wire	Kg.	23.50				
			Unskl	m-day	0.20	Sel. wire	Kg.	2.75				
	e. Box size 2m. X 1m. X0.3m.	Each	Skill	m-day	0.29	G.I.wire	Kg.	13.10				
			Unskl	m-day	0.12	Sel. wire	Kg.	1.85				
	f. Box size 3m. X 1m. X 0.3 m.	Each	Skill	m-day	0.42	G.I.wire	Kg.	19.30				
			Unskl	m-day	0.17	Sel. wire	Kg.	2.40				
	4. Making gabion boxes incl. cutting wire, netting, etc. complete. Hexagonal mesh size 100 mm. X 120mm. Mesh wire - 9 SWG Selvedge wire - 6 SWG											
	a. Box size 2m. X 1m. X 1m.	Each	Skill	m-day	0.45	G.I.wire	Kg.	30.60				
			Unskl	m-day	0.20	Sel. wire	Kg.	3.75				
	b. Box size 3m. X 1m. X 1m.	Each	Skill	m-day	0.63	G.I.wire	Kg.	44.50				
			Unskl	m-day	0.28	Sel. wire	Kg.	4.85				
	c. Box size 2m. X 1m. X 0.5m.	Each	Skill	m-day	0.32	G.I.wire	Kg.	20.85				
			Unskl	m-day	0.14	Sel. wire	Kg.	3.00				
	d. Box size 3m.X 1m. X0.5m.	Each	Skill	m-day	0.45	G.I.wire	Kg.	30.60				
			Unskl	m-day	0.20	Sel. wire	Kg.	3.90				
	e. Box size 2m. X 1m. X0.3m.	Each	Skill	m-day	0.26	G.I.wire	Kg.	16.95				
			Unskl	m-day	0.12	Sel. wire	Kg.	2.65				
	f. Box size 3m.X 1m.X 0.3m		Skill	m-day	0.37	G.I.wire	Kg.	25.00				
			Unskl	m-day	0.17	Sel. wire	Kg.	3.55				

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
16	5. Making gabion boxes incl. cutting wire & netting etc. Hexagonal mesh size 100 mm X 120mm Mesh wire- 10SWG Salvedge wire- 7 SWg											
	a. Box size 2m. X 1m. X 1m.	Each	Skill Unskl	m-day m-day	0.45 0.20	G.I.wire Sel. wire	Kg. Kg.	24.15 3.15				
	b. Box size 3m. X 1m. X 1m.	Each	Skill Unskl	m-day m-day	0.63 0.28	G.I.wire Sel. wire	Kg. Kg.	35.10 4.10				
	c. Box size 2m. X 1m. X 0.5m.	Each	Skill Unskl	m-day m-day	0.32 0.14	G.I.wire Sel. wire	Kg. Kg.	16.45 2.50				
	d. Box size 3m. X 1m. X 0.5m.	Each	Skill Unskl	m-day m-day	0.45 0.20	G.I.wire Sel. wire	Kg. Kg.	24.15 3.30				
	e. Box size 2m. X 1m. X0.3m.	Each	Skill Unskl	m-day m-day	0.26 0.12	G.I.wire Sel. wire	Kg. Kg.	13.40 0.25				
	f. Box size 3m. X 1m. X 0.3 m.	Each	Skill Unskl	m-day m-day	0.37 0.17	G.I.wire Sel. wire	Kg. Kg.	19.75 3.00				
	6. Gabion const. works incl. placing in position, tying gabion by tightening wire closing from the top. Tying wire-11 SWG											
	a. Box 2m. X 1m. X 1m.	Each	unskl	m-day	0.40	Ty. wire	Kg.	1.15				
	b. Box 3m. X 1m. X 1m.	Each	unskl	m-day	0.60	Ty. wire	Kg.	1.60				
	c. Box 2m. X 1m. X 0.5m.	Each	unskl	m-day	0.20	Ty. wire	Kg.	0.90				
	d. Box 3m.X 1m. X0.5m.	Each	unskl	m-day	0.30	Ty. wire	Kg.	1.20				
	e. Box 2m. X 1m. X0.3m.	Each	unskl	m-day	0.12	Ty. wire	Kg.	0.80				
	f. Box 3m.X 1m.X 0.3m	Each	unskl	m-day	0.18	Ty. wire	Kg.	1.10				
	7. Gabion const. works incl. placing in position, tying gabion by tightening wire closing from the top. Tying wire-12 SWG											
	a. Box 2m. X 1m. X 1m.	Each	unskl	m-day	0.40	Ty. wire	Kg.	0.95				
	b. Box 3m. X 1m. X 1m.	Each	unskl	m-day	0.60	Ty. wire	Kg.	1.30				
	c. Box 2m. X 1m. X 0.5m.	Each	unskl	m-day	0.20	Ty. wire	Kg.	0.70				
	d. Box 3m.X 1m. X0.5m.	Each	unskl	m-day	0.30	Ty. wire	Kg.	0.95				
	e. Box 2m. X 1m. X0.3m.	Each	unskl	m-day	0.12	Ty. wire	Kg.	0.65				
	f. Box 3m.X 1m.X 0.3m	Each	unskl	m-day	0.18	Ty. wire	Kg	1.90				
	8. Gabion const. works incl. placing in position, tying gabion by tightening wire											

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
16	closing from the top. Tying wire-13 SWG											
	a. Box 2m. X 1m. X 1m.	Each	unskl	m-day	0.40	Ty. wire	Kg.	0.75				
	b. Box 3m. X 1m. X 1m.	Each	unskl	m-day	0.60	Ty. wire	Kg.	1.00				
	c. Box 2m. X 1m. X 0.5m.	Each	unskl	m-day	0.20	Ty. wire	Kg.	0.55				
	d. Box 3m.X 1m. X0.5m.	Each	unskl	m-day	0.30	Ty. wire	Kg.	0.75				
	e. Box 2m. X 1m. X0.3m.	Each	unskl	m-day	0.12	Ty. wire	Kg.	0.50				
	f. Box 3m.X 1m.X 0.3m	Each	unskl	m-day	0.18	Ty. wire	Kg.	0.70				
	9. Making rectangular gabion box (3m.X 1.5m. X 0.75m.) with two way knot incl. wire cutting, netting etc. complete.											Depending upon the river current or flow, separate provision must be made for salvage wire (if required)
	a. Mesh size 100mm.X 100mm. Mesh wire-10SWG Selvedge wire-7SWG	Each	skill unskl	m-day m-day	0.70 0.44	G.I. wire	Kg.	33.00				
	b. Mesh size 150mm.X 150mm. Mesh wire-10SWG Selvedge wire-7SWG	Each	skill unskl	m-day m-day	0.50 0.20	G.I. wire	Kg.	20.00				
	c. Mesh size 150mm.X 150mm. Mesh wire-8SWG Selvedge wire-6SWG	Each	skill unskl	m-day m-day	0.60 0.30	G.I. wire	Kg.	31.75				
	10. Making rectangular gabion box (3m.X 1.5m. X 0.75m.) with two way knot incl. wire cutting, netting etc. complete.											
	a. Mesh size 150mm.X 150mm. Mesh wire-8SWG Selvedge wire-6SWG	Each	skill unskl	m-day m-day	0.70 0.30	G.I. wire	Kg.	33.00				
	b. Mesh size 100mm.X 100mm. Mesh wire-10SWG Selvedge wire-7SWG	Each	skill unskl	m-day m-day	0.80 0.50	G.I. wire	Kg.	36.00				
	11. Filling stone in gabion box	Cu.m	skill	m-day	0.50							Stone collection work in not included
	12. Making launching apron by filling stone in gabion crate incl. haulage of const. mat. up to 150 m. distance	Cu.m	skill unskl	m-day m-day	0.26 3.50				Stone	Hire	Apx	

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
	13. Making pile of size 150mm X 200mm including dressing and cutting size.	Each	skill	m-day	0.05							
	14. Painting two coat bitumen paint on surfaces of pile of sal wood bakti having dia. ranging form 150mm. to 200 mm. and hammering into ground.	m.	skill unskl	m-day m-day	0.02 0.36	Bitumen	Kg.	0.25	-	-	-	Bakli or Bakal (in Nepali) is rough cut or sawn timber having one or more sides with natural curve surface.
	15. Jointing sal bakti cross piece of 100 mm. to 150 mm. dia. by 16 mm. dia. bolt, nut & washer at every joint. (Cross piece length =1.5m.)	10m.	skill unskl	m-day m-day	0.40 0.40	Nut Bolt Washer etc.	Kg.	12.00	-	-	-	Water logged area where stones are required to be used, add 50 % more labour
	16. Joing sal bakti backstay of dia. 150 mm. to 200 mm. by 16 mm. dia. bolt, nut, washer etc. at every joint. a. Length of backstay =5m. b. Nr of joints=3.00	10 m.	skill unskl	m-day m-day	0.18 0.18	Nut Bolt Washer etc.	Kg.	4.50	-	-	-	Add 50% in labour cost if stones are to be used
	17. Joining belling piece of 150mm. to 200 mm. diameter by 16mm. dia, bolt, nut, washer, etc, at every joints with vertical pile -Length of belling piece= 6.00m. - Vertical pile 1.2m./Nr.of joints	Cu.m	skill unskl	m-day m-day	0.13 0.13	Nut Bolt Washer etc.			-	-	-	
	18. Making 6mm. to 8mm. dia. bamboo runner and fixing it to a vertical pile with nails	10m.	skill unskl	m-day m-day	0.04 0.08	Bamboo Nails	Nr. Kg.	2.00 0.20				
	19. Making 6mm. to 8mm. dia. bamboo pile & hammering into the ground incl. cutting as per size, pointing the end, etc, complete - Nr. of pile 8.00 - Spacing of piles 1.25 m.	10m	skill unskl	m-day m-day	0.08 0.70							

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
	20 Supplying bamboo fabric made by nailing bamboo pieces & fixing them in place by tying with 20 SWG wire or by nailing with 75mm. nails at alternating points.	100 Sq.m	skill	m-day	20.00	Bamboo Nails	Nr. Kg.	100.0 2.50				
	21. Making two half pieces from 80mm. dia. bamboo and fixing them to vertical pole by wire or nails	100 Sq.m	skill unskl	m-day m-day	10.00 10.00	Bamboo Nails	Nr. Kg.	60.00 2.50				
	22. Supplying & placing in place 15 cm. dia. rolls of grass incl. tying rolls by wire	Cu.m	unskl	m-day	0.50	Grass	Cu.m	1.00				
	23. Filling empty bags with local sand, sewing them closes & pacing them including haulage up to 100m. distance.	100 Sack	unskl	m-day	10	Empty sacks sewing thread	Nr.	100 0.75				
	24. Supply and delivery of Nylon rope crates including cutting, weaving,netting etc. with											
	a. 8mm. dia. rope, box size 6m. X 3m. X 0.75m. and mesh size 20 cm.X20cm	Box	skill	m-day	2.0	Nylon rope	Kg.	4.5				
	b. 4 mm. dia. box size 3mX 1.05m X 1.05m and mesh size 15 cm X 15 cm	Box	skill	m-day	1.50	Nylon rope	Kg.	3.7				

16. Pipe & Sewer Laying Works.

S. N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinary			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
17	1. Laying R.C.C. Pipe and its accessories with 1:2 cement sand mortar, jule etc. incl. haulage up to 100m. distance.											
	a. 15cm. dia. pipe	32m.	Skill Unskl	m-day m-day	3.00 15.00	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00 0.035 0.05 1.60 Apporx				
	b. 20 cm. dia. pipe	32m.	Skill Unskl	m-day m-day	4.00 20.0	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00 0.052 0.08 2.40 Apporx				
	c. 30 cm. dia. pipe	32m.	Skill Unskl	m-day m-day	6.00 22.0	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00 0.083 0.13 3.63 Apporx				
	d. 40 cm. dia. pipe	32m.	Skill Unskl	m-day m-day	6.00 22.00	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00. 0.83 0.13 3.63 Apporx				Add excavation & backfilling works
	e. 50 cm. dia. pipe	32m.	Skill Unskl	m-day m-day	8.00 30.00	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00 0.143 0.22 5.40 Apporx				
	f. 60 cm. dia. pipe	32m.	Skill unskl	m-day m-day	6.00 35.00	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00 0.218 0.30 7.00 Apporx				
	g. 75 cm. dia. pipe	32m.	Skill unskl	m-day m-day	10.00 40.00	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00 0.255 0.35 9.00 Apporx				
	h. 90cm dia. pipe	32m	Skill unskl	m-day m-day	11.00 50.00	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00 0.29 0.40 12.00 Aprox				
	i. 120cm dia. pipe	32m	Skill unskl	m-day m-day	12.00 75.00	R.C.C. pipe Cement sand jute bitumen	m. M.T. Cu.m Kg	32.00 0.363 0.50 16.00 Aprox				

17.(2) HDPE pipe laying works (with butt welded joints) incl. fitting

Outer Diameter in mm for 1000 m. length	Labour			Tools	Machinery	Feul	Remarks
	Plumber	Helper	Coolie	Rent of tools and plants, Electric generator & mech jack	Fuel cost equivalent to petrol cost (Litre)	Miscellaneous Multiplier of labour cost	
20 & 25	1.00	1.00	2.00	(One day)	0.25	2.51	Estimate of rent of electric gen. & mech. jack is Rs30.00 per day
32	1.00	1.00	3.00	,, ,,	0.25	2.51	
40 & 50	1.50	1.50	3.00	,, ,,	0.37	2.51	
For 50 m. length							
63.75 & 90	1.00	1.00	2.00	(One day)	0.05	2.51	Deduct rent of tools from bills of contractor if tools are taken form project by the contractor
110 & 125	1.50	1.50	3.00	,, ,,	0.50	2.51	
140, 160 & 180	2.00	2.00	4.00	,, ,,	1.00	2.51	

17.(3) Rate analysis for laying 30 m. long C.I. pipe

Inner Dia.	Labour		Helper	Unskilled labour	Materials				Remarks
	Plumber				Lead for joint only	Hemp (Sanpat)	Miscellaneous item such as fuel wood, labricant, tools, plant etc.		
	Lead joint flanged & flagged joint	Titan joint					Lead	Taitan	
3 (80 mm)	1.50	0.75	1.50	3.00	20.00	1.00	5%	1%	1. Quantity of lead & hemp is estimated by assuming nine joints in 30 m. length of pipe. Accordingly make estimate for other lengths of pipe.
4 (100 mm)	1.75	1.00	1.75	3.50	23.50	1.60	,,	,,	
5 (125 mm)	2.00	1.00	2.00	4.00	30.80	1.80	,,	,,	
6 (150 m)	2.50	1.25	2.50	5.00	34.70	1.80	,,	,,	
8 (200 mm)	3.00	1.50	3.00	6.00	52.10	2.10	,,	,,	
10(250mm)	4.00	2.00	4.00	8.00	63.30	3.10	,,	,,	2. This includes haulage dist. up to 250m. from site store
12(300mm)	5.00	2.50	5.00	10.00	73.50	4.30	,,	,,	

17.4-1 Rate analysis for laying 30 m. long G.I. pipe

Dia. of pipe	Plumber	Helper	Coolie	Red lead paint, Hemp etc.	Miscellaneous	Remarks
1. 15, 20 mm.	0.50	1.00	1.00	10% of labour cost	2.5% of labour cost	Haulage up to 500 m. form site store is included
2. 25, 32 mm.	0.50	1.50	1.50	,,	,,	
3. 40, 50 mm.	0.75	2.00	2.00	,,	,,	
4. 65, 80 mm	1.25	2.00	3.00	,,	,,	
5. 100 mm.	1.75	2.00	4.00	,,	,,	
6. 125 mm	2.00	2.50	5.00	,,	,,	

S.N.	Description of works	Unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty	Type	Unit	Qty	Type	Unit	Qty	
17	4. -2 G.I. Pipe fitting & fixing works											
	- 2.1 Metal value meter and 15 mm. ferrule for all types of fitting	one	1/3 of labour cost of pipe fitting of particular size as per 17-4.1			Red lead paint, hemp etc. to apply in joints	1% of the cost of 10 m. length of related pipe size					
	- 2.2 Bend, elbow, union Reducer, flange, connection tap etc. for all types of fitting	one	1/6 of labour cost of pipe fitting of particular size as per 17-4.1			Red lead paint, hemp etc. to apply in joints	0.5% of the cost of 10 m. length of related pipe size					
	-2.3 For each additional socket	one	1/15 of labour cost of pipe fitting of particular size as per 17-4.1				0.1% of the cost of 10 m. length of related pipe size					
	4.3 C.I. Pipe fitting & fixing works .											
	- 3.1 'Truss' value with flange taper, lead colour flange and 15 mm, ferrule for all types of fitting	one Fit.	1/2 of labour cost of pipe fitting of particular size as per 17-3			Red lead paint, hemp etc. to apply in joints	0.1% of the cost of 15 m. length of related pipe size					
	- 3.2 ' Truss' value with lead taper & lead tee for all types of fitting .	one Fit.	1/2 of labour cost of pipe fitting of particular size as per 17-3				2% of the cost of 15 m. length of related pipe size					
	-3.3 Flanged bend . flanged elbow, lead joint elbow, for all types fitting	one Fit	1/3 of labour cost of pipe fitting of particular size as per 17-3				0.5% of the cost of 15 m. length of related pipe size					
	-3.4 Lead joint bed	one Fit.	2/3 of labour cost of pipe fitting of particular size as per 17-3				2% of the cost of 10 m. length of related pipe size					

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty	
17	5. Slotted pipe laying works.											
	a. Pipe of dia. 150 mm.	30m.	skill	m-day	2.50							
			unskl	m-day	4.00							
			semi-skill	m-day	1.50							
	b. Pipe of dia. 200mm	30m.	skill	m-day	3.25							
			unskl	m-day	5.00							
			semi-skill	m-day	2.25							
	6. Laying stone - ware glazed pipe with all its accessories in 1:1 cement sand mortar joint.											Add for watchman & miscellaneous works (approx)
	a. Pipe of dia. 100 mm.	30m.	skill	m-day	6.00	Cement	M.t.	0.018				
			unskl	m-day	8.00	Sand	Cu.m	0.105				
						Jute	Kg.	2.05				
						Bitumen		Aprox				
	b. Pipe of dia. 150 mm	30m.	skill	m-day	7.00	Cement	M.t.	0.03				
			unskl	m-day	11.50	Sand	Cu.m	0.2				
						Jute	Kg.	4.75				
						Bitumen		Aprox				
	c. Pipe of dia. 200 mm.	30m.	skill	m-day	8.25	Cement	M.t.	0.045				
			unskl	m-day	13.00	Sand	Cu.m	0.3				
						Jute	Kg.	6.60				
						Bitumen		Aprox				
	d. Pipe of dia 300 mm.	30m.	skill	m-day	12.00	Cement	M.t.	0.103				
			unskl	m-day	19.00	Sand	Cu.m	0.65				
						Jute	Kg.	11.70				
						Bitumen		Aprox				
	e. Pipe of dia. 400 mm.	30m.	skill	m-day	15.00	Cement	M.t.	0.143				
			unskl	m-day	22.00	Sand	Cu.m	0.9				
						Jute	Kg.	18.35				
						Bitumen		Aprox				
	7. Laying & painting 100 mm. dia. Asbestos rainwater drain pipe including bend, socket and necessary specials.	30m.	skill	m-day	7.000	Cement	M.t.	0.18				
			unskl	m-day	9.00	Sand	Cu.m	0.105				
						Jute	Kg.	2.02				
						Bitumen		Aprox				

18. Water proofing works

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty.	Type	Unit	Qty	Type	Unit	Qty	
18	1. Leak proofing concrete roof by using plastic cement roof coating (one coat lining of asbestos roof coat & two coats plastic cement coating.	sq.m	skill unskl	m-day m-day	0.323 0.108	Asbestos roofcoat (lining) plastic cement coating	Lt. Lt.	0.735 1.47				Add sundries in this item for brush
	2.Leak proofing concrete roof by using plastic cement roof coating rarfelt (one coat lining of asbestos roof coat & two coats plastic cement coating)	sq.m	skill unskl	m-day m-day	0.215 0.108	Asbestos roofcoat (lining) plastic cement coating	Lt. Lt.	0.49 0.98				
	3. Leak proofing roof by using plastic cement roof coat & paving with dense bricks in 1:1 cement mortar.	sq.m	skill unskl	m-day m-day	0.54 0.108	Asbestos roofcoat (lining) plastic cement coating densed brick 15X15mm cement sand	Lt. Lt. Nr. M.T. cu.m	0.49 1.47 43.00 0.0016 0.0011				
	4. Patch repair work by using glass web and plastic cement.	sq.m	skill unskl	m-day m-day	0.54 0.11	Glassweb Asbestos roofcoat plastic cement	sq.m Lt. Lt.	0.75 0.49 1.47				
	5. Leak proofing in basement or under ground works by using plastic cement & sheet.	sq.m	skill unskl	m-day m-day	0.43 0.108	Asbestos roofcoat (lining) plastic cement	Lt. Lt.	0.98 0.98				
	6. Leak proofing by using plastic cement on C.G.I. sheet or aluminium sheet or asbestos sheet.	sq.m	skill unskl	m-day m-day	0.27 0.108	Asbestos roofcoat plastic cement	Lt. Lt.	0.16 0.245				
	7. 2cm. thick damp proofing work using cement sand mortar of ratio 1:2 and water proof compound	each 10 sq.m	skill unskl	m-day m-day	0.75 0.80	Cement sand waterproof comp.	M.T. cu.m kg.	0.135 0.18 2.70				
	8. 2.5cm. thick damp. proofing course of cement concrete of ratio 1:1.5:3	each 10 sq.m	skill unskl	m-day m-day	1.00 1.25	Cement sand aggrts. (12mm) W.P.comp.	M.T. cu.m cu.m kg.	0.1125 0.113 0.25 2.25				
	9. 3.8cm. thick damp. proofing on damp proof course and covering it with sand.	each 10 sq.m	skill unskl	m-day m-day	1.00 2.00	Cement sand aggrts. (12mm) W.P.comp.	M.T. cu.m cu.m kg.	0.12 0.17 0.34 2.88				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
18	10. Applying one coat bitumen paint on damp proof course and covering it with sand.	10 sq.m	skill	m-day	0.60	Bitumen coarse sand firewood	Kg. cu.m kg.	10.00 0.02 30.00				
	11. Laying one layer of polythene sheet of 500gauge.	10 sq.m	skill unskl	m-day m-day	0.60 0.60	Polythene sheet	sq.m	11.00				
	12. Applying tarfelt a. One layer	10 sq.m	skill unskl	m-day m-day	1.10 3.50	Tarfelt bitumen forewood Coarse sand	sq.m kg. kg. cu.m	11.00 15.00 60.00 0.31				
	b. Two layer	10 sq.m	skill unskl	m-day m-day	2.30 4.60	Tarfelt bitumen forewood Coarse sand	sq.m kg. kg. cu.m	22.00 25.00 80.00 0.31				
	13. Applying tarfelt of dampproof grade. a. One layer	10 sq.m	skill unskl	m-day m-day	2.35 4.60	Tarfelt bitumen forewood Coarse sand	sq.m kg. kg. cu.m	11.00 17.00 60.00 0.31				
	b. Two layer	10 sq.m	skill unskl	m-day m-day	3.50 11.70	Tarfelt bitumen forewood Coarse sand	sq.m kg. kg. cu.m	22.00 25.00 80.00 0.31				
	14. Applying one coat rain seal paint or equivalent paint.	sq.m	skill unskl	m-day m-day	0.162 0.54	Rain seal paint	Lt.	0.245				

19. Demolition & Maintenance works.

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
19.	1. Demolishing mud mortared masonry wall and removing demolished materials 10m. away from the site.	cu.m	unskl	m-day	1.06							
	2. Demolishing cement mortar masonry wall and removing demolished materials 10m. away from the site.	cu.m	unskl	m-day	2.12							
	3. Demolishing P.C.C or mortared R.B.C. works and removing demolished materials 10m. away from the site.	cu.m	unskl	m-day	11.00							
	4. Demolishing P.C.C. or mortared concrete & removing demolished materials (dust) 10m. away from the site	cu.m	unskl	m-day	4.00							
	5. Demolishing cement or lime mortared plaster & removing demolished materials (dust) 10m. away from the site.	cu.m	unskl	m-day	0.108							
	6. Demolishing tile roof & removing demolished tiles, timber etc. 10m. away from the site and storing safely.	cu.m	skill unskl	m-day m-day	0.054 0.081							
	7. Taking-up & relaying foot path after	cu.m	skill unskl	m-day m-day	0.706 5.29							
	8. Excavating cable trench in black topped road.	10 sq.m	skill	m-day	10.00							
	9. Paving dry brick on cable.	10 sq.m	skill unskl	m-day m-day	0.538 1.076	Brick	Nr.	440				
	10. Treating timber by applying anti-termite or anti-insect paint.	sq.m	skill unskl	m-day m-day	0.22 0.10	Wood preserve paint	Lt.	0.245				

20. Electricity Line Works

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qtty.	Type	Unit	Qty	Type	Unit	Qty	
20	1.1 Making timber pole for electricity line incl. supply of materials, cutting timber, drilling holes in timber pole & iron plate, fitting, fixing, tying as per drawing & three layers lining by bitumen all works complete.		Spvsr or ovsr	m-day	0.20							Spvsr= Supervisor Ovsr= Oversear
	a. Length of pole 8.5m. (bitumen lining 1.68m. from bottom.)	each	lineman unskl	m-day m-day	0.40 2.00	Timber pole Iron nutbolt with washer 15mm. dia. & 180 mm. length Iron plate of size 4x4x900 (mm.) Bitumen	Nr. Nr. Nr. Kg.	2.00 12.0 2.00 4.00				
	b. Length of pole 10.4m. (bitumen lining 1.83m. from bottom.)	each	Spvsr or ovsr lineman unskl	m-day m-day m-day	0.33 0.66 3.33	Timber pole 15x15x550 (cm.) Iron nutbolt with washer 16mm. dia. & 200 mm. length Iron plate of size 14x4x900 (mm.) Bitumen	Nr. Nr. Nr. Kg.	2.00 8.00 2.00 5.00				
	1.2 Erecting steel pole for electricity line incl. fixing in the ground as per drawing & applying three coat lining of bitumen complete.											
	a. Length of pole 8.5 m. (Bitumen lining up to 1.68m. form the bottom)	each	Spvsr or ovsr lineman unskl	m-day m-day m-day	0.33 0.66 3.33	Bitumen	Kg.	4.00				
	b. Length of pole 8.5 m. (Bitumen lining up to 1.68 m. from the bottom.)	each	Spvsr or ovsr lineman unskl	m-day m-day m-day	0.50 1.00 5.00	Bitumen	Kg.	5.00				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
20.	2. Making timber pole of electricity line incl. supply of materials, cutting timber, sawing etc. complete (pole size 10cm. X 10cm. X 300 cm.	each	unskl	m-day	0.80	Timber	Cu.m	0.033				
	3. Supply of round sal wood pole for electricity line with three coats bitumen lining .											
	a. Length of pole 8.5 m. with top end dia. 15 cm. and average dia. 16.5cm. (bitumen lining up to 1.68m from bottom)	each	unskl	m-day	0.25	Timber pole Bitumen	Nr. Kg.	1.00 4.00				
	b. Length of pole 10.4 m. with top end dia. 14 cm. and average dia. 19 cm. (bitumen lining up to 1.83 m form bottom)	each	unskl	m-day	0.25	Timber pole Bitumen	Nr. Kg.	1.00 5.00				
	4. Making H-pole structure of timber with length 10.4 m. for electricity line incl. supply of materials, cutting timber & iron, drilling holes as needed, fitting, fixing, & tying as per drawing and applying three layers of bitumen lining up to 1.83 m. from bottom.											
	a. for 11 kv	each	skill unskl	m-day m-day	3.76 1.00	Timber pole 15x15x150 cm. Iron notbolt of 16mm. X 200 mm. long. Iron angels 50x50 x 5mm. 3.8kg. per m. & 235 m. long. Romale Nut 16mm dia., 200m long Iron channel 45x100x5mm 5.8kg. per m. & 200cm. long U-clamp 150x150x5m. from 600x50x5mm plate Iron nutbolt 16 mm. dia. & 70 mm. long Iron plate 15x5x90mm. Bitumen	Nr. Nr. Nr. Nr. Nr. Nr. Nr. Nr. Kg.	4.00 20.00 2.00 20.00 1.00 2.00 5.00 4.00 10.00				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
20	4. b. for 33kv					Iron angels 250cm long	Nr		2.00			Section as in 11kv.
	C. for 33 kv					Iron channel 250cm. long	Nr.		2.00			
	5.1 Erection of electric pole for electric line incl. hauling form site store up to const. site, excavation of footing, making pole vert, and placing in footing, ramming backfilling for strengthening etc. complete.											
	a. 8.5m. long pole of 14x14 cm.	Each 5 pole	skill unskl	m-day m-day	3.0 25.0							
	b. 10.4m. long pole of 15x15 cm.	Each 4 pole	skill unskl	m-day m-day	3.0 25.0							
	c. 3 m. long pole of 25 x 25 cm.	Each 25 pole	skill unskl	m-day m-day	3.00 25.0							
	d. Lenth of pole 8.5 m. average dia. of round pole is 16.50 cm.	Each 5 pole	skill unskl	m-day m-day	3.0 25.0							
	e. Length of pole 10.4 m. average dia. of round pole is 19 cm.	Each 4 pole	skill unskl	m-day m-day	3.0 25.0							
	f. H-pole structure of 10.4 m. high.	Each 2 pole	skill unskl	m-day m-day	3.0 25.0							
	5.2 Erection of electric pole for electric line up to 33 kv. incl. hauling form site store up to const. site, excavation of footing, making pole vert, and placing in footing, concreting in footing, ramming backfilling for strengthening etc. complete.	Each 2 pole	skill unskl	m-day m-day	4.00 25.0							
	5.3 Erection of pre-stressed concrete pole for electric line.	Each 4 pole	skill unskl	m-day m-day	3.0 25.0							Equivalent to the erection of 10.4 long timber pole
	6. Fixing A.C.S.R. conductor of various size given below to pole with proper tension in transmission line incl. hauling form site store to construction site using only labours, establishing temporary station, laying conductor, giving proper tension to conductor, fixing to pole, tying them by aluminium binding wire etc. all fixing work complete											

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
20	6. a. One Km. long 0.075 A.C.S.R. conductor	Each	Er.	m-day	1.00							Er.=Engineer
			spvr.	m-day	3.00							Spvr.= supervisor
			Line man	m-day	21.0							Hlpr= Helper
			Hlpr.	m-day	6.00							
			unskl	m-day	66.0							
	b. One Km. long 0.05 A.C.S.R. conductor	Each 3 wire	Er.	m-day	1.00							
			spvr.	m-day	2.00							
			Line man	m-day	15.0							
			Hlpr.	m-day	6.00							
			unskl	m-day	56.0							
	c. One Km. long 0.1 A.C.S.R. conductor	Each 3 wire	Er.	m-day	1.00							
			spvr.	m-day	2.00							
			Line man	m-day	15.0							
			Hlpr.	m-day	6.00							
			unskl	m-day	51.0							
	d. One Km. long 0.1 A.C.S.R. conductor	Each 3 wire	Er.	m-day	1.00							
			spvr.	m-day	2.00							
			Line man	m-day	15.0							
			Hlpr.	m-day	6.00							
			unskl	m-day	76.0							
	7. Fixing A.C.S.R. conductor of various size given below with proper tension for the distriubution line incl. haulage form site store to const. site using labours, establishing temporary station, laying conductors, giving designed tension to them, fixing to pole & binding by aluminiun wire etc. all fixing 0.05 A.C.S.R.											
	a. fixing 0.05 A.C.S.R. conductor 250 m. long	Each 5 wire	skill	m-day	35.0							
			unskl	m-day	7.00							
	b. fixing 0.05 A.C.S.R conductor 250m. long	Each 4 wire	skill	m-day	28.0							
			unskl	m-day	5.60							
	c. fixing 0.05 A.C.S.R. conductor 250 m long	Each 3 wire	skill	m-day	21.0							
			unskl	m-day	4.20							
	d. fixing 0.03 A.C.S.R. conductor 250m. long.	Each 5 wire	skill	m-day	28.0							
			unskl	m-day	5.6							
	e. fixing 0.03 A.C.S.R. conductor 250m. long.	Each 4 wire	skill	m-day	22.4							
			unskl	m-day	4.64							
	f. fixing 0.03 A.C.S.R. conductor 250m. long.	Each 1 wire	skill	m-day	5.6							
			unskl	m-day	1.16							
	8. Fixing distribution transformer (25 KVA 200 KVA ploe mounted) incl. earthing set, L.A.D.O. fuse and G.O. switch etc. complete.	each	Spvr. or Ovsr.	m-day	10.0							
			Lineman	m-day	2.00							
			Hlpr.	m-day	2.00.							
			unskl	m-day	10.0							

21. Transportation by Truck

21.1 Speed of truck (kmph) - 10. 20. 30. 40. 50.

Let's assume

1. Distance=- D
2. Speed= S kmph
3. Loading and Unloading time = 0.75 hrs
4. Time for single trip = T hrs
   = (2x Distance/Speed + Loading & unloading time) hrs.
   = (2x D/S+ 0.75) hrs

Table 2

Distance -D	Full time tanken by Truck per Trip-T hours						
	10 kmph	Load/Unload labour md. multiplication factor	20 kmph	Load/Unload Labour md multiplication factor	30 kmph	40 kmph	50 kmph
1.	0.95		0.85		0.816	0.8	0.79
2.	1.15		0.95		0.883	0.85	0.83
3.	1.35		1.05		0.95	0.9	0.87
4.	1.55		1.15		1.016	0.95	0.91
5.	1.75		1.25		1.083	1.00	0.95
Above 5 Km per hour	-0.10		0.10		+0.067	+ 0.05	+0.04

Table 2.

S.N		Weight kg per m3	Void %	Per Trip transportation by trucks given below			Labour for Loading/Unloading							Remarks
				3 MT truck	5 MT truck	6 Mt truck	First 1 Km.	First 2 Km.	First 3 Km.	First 4 Km.	First 5 Km.	Above 5 Km/Km	Truck ideal hr	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Soil, Dug	1450	20	2.5 m3	4.14 m3	5.9 m3	0.210	0.254	0.298	0.344	0.386	0.044	0.221	For metalled road use this value and for unmetalled road multiply these by 1:5
2	Sand, Surkhi, Maram	1450	30	2.69 „	4.48 „	5.38 „	0.204	0.246	0.289	0.332	0.375	0.043	0.214	
3	Gravel 40 mm.	1600	25	2.34 „	3.90 „	4.69 „	0.221	0.267	0.313	0.370	0.406	0.046	0.232	
4	Shingle, 40 mm	1450	35	2.79 „	4.65 „	4.58 „	0.221	0.267	0.313	0.370	0.406	0.046	0.232	
5	Broken stone 40mm	1600	30	2.44 „	4.06 „	4.870 „	0.204	0.246	0.289	0.332	0.375	0.043	0.214	
6	Broken stone 40mm.	1450	40	2.89 „	4.83 „	5.79 „	0.221	0.267	0.313	0.360	0.406	0.046	0.232	Take 500 Nr. of bricks per 1.03 m3 proportionate to weight
7	Brickbat	1000	35	4.05 „	6.75 „	8.10 „	0.221	0.267	0.313	0.360	0.406	0.046	0.232	
8	Stone soling boulder	2400	40	1.75 „	2.92 „	3.50 „	0.221	0.267	0.313	0.370	0.406	0.046	0.232	
9	Stone, Dug	2400	50	1.88 „	3.13 „	3.76 „	as per serial No. 3							
10	Brick			1200 Nr.	2000 Nr	2400 Nr	0.221	0.267	0.313	0.370	0.406	0.046	0.232	
11	Cement, Steel			3 M.T.	5 M.T.	6 M.T.								
12	Bitumen													
13	Stone Block													
14	G.I. C.I. Pipe													
15	C.C. Pipes													
16	Lime, wood			1 MT	5 M.T	6 M.T.	0.168	0.203	0.238	0.274	0.306	0.035	0.176	

Depending upon the type of materials and the unit quantity possible to transport trip, select the type of truck to be used form table 2. For example , assume a quantity Q. then for a determinded distance and guessed speed of truck read out the time required per trip form table 1. Assume this time as T. the figure obtained by dividing T. by Q is the time in hours taken by that truck for transporting unit quantity of the material for that distance. Assume this time as T. By knowing the per hour hiring rate of the truck, it is possible to calculate the rate for transporting a unit quantity of the material for that distance (i.e. Per hr. rateX 1)

21.2

Transporting constructikon materials by 6 MT diesel truck.

Cost of the Truck = NRs. 250000.00
Life span = 10000.00 hrs.
Yearly working hours = 2000.00 hrs

1. Ownership cost/hr

a Dereciation cost/hr. = $\frac{250000.00}{10000.00}$ = NRs. 25.00 per hr

b. Insurance cost/hr = $\frac{0.02X250000.000}{2000}$ = NRs. 2.50 per hr

c. Interest cost/hr. = $\frac{0.01 X 250000.00}{2000}$ = NRs. 1.25 per hr

Total NRs. 28.75 per hr.

2. Operation cost

2.1 Maintaniance cost

a. Overhauling cost/hr. = $0.55X \frac{250000.00}{10000}$ = NRs. 13.75 per hr.

b. Operation & maintenance cost $0.23 X \frac{250000.00}{10000}$ = NRs. 5.75 per hr.

Total NRs. 19.50

2.2 Cost of consumables

A. Oil & Lubrication cost/hr.

HSD	5.5 Litre X 5	=	NRs. 27.50
Mobil	0.1 Litre x 20	=	NRs. 2.00
HSD	0.30 Litre X 20	=	NRs. 0.60
Grease	0.015 Kg. X 30	=	NRs. 0.45

Total NRs. 30.55 Per hour

B. Spare parts

Tyre life span = 2000 hrs

Cost per hour = $\frac{40000.00}{2000.00}$ X 6 = NRs. 12.00

Cost of tyress = NRs. 12.00 per hour

Mise. (Lump sum) .....NRs. 075 per hour
Extra (Lump sum) .....NRs. 0.25 per hour
Total NRs. 13.00 per hour

C. Salaries .....NRs. 3.00 per hour
Driver ..... NRs. 2.40 per hour
Helper .....NRs. 15.00 per hour
Loading & Unloading Expeneses Total NRs. 13.00 per hour

D. Improvement & Other minor repair
repair expreses NRs. 1.50 per hour

Actual consmer prices. (A) + (B) + (C) + (D)
= 30.55 + 13.00 +20.40 + 1.50 = NRs. 65.45 per hr.

3. Supervision & Overhead expenses = $\frac{0.05X\ 250000.00}{2000}$ = NRs. 6.25 per hour.

Total expenses/per hour = 1+2+ 3
= 28.75+ (19.50 +65.45) + 6.25
= NRs. 119.95 per hour.

22. Haulage

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
22.	1. Hauling by labour using baskets such as doko, Tokari, Kharpan, thunse, etc.											
	1.1 Loading, hauling and unloading clay, sand & stone dust											
	a. First 10 m. haulage & piling	Cu.m	unskl	m-day	0.40							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.12							
	1.2 Loading, hauling and unloading peeble, gravel and aggregates.											
	a. First 10 m. haulage & piling	Cu.m	unskl	m-day	0.30							
	b. For every additional 10 m	Cu.m	unskl	m-day	0.13							
	1.3 Loading, hauling, and unloading rubble, block stone & dressed stone.											
	a. First 10 m. haulage & piling	Cu.m	unskl	m-day	1.10							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.19							
	1.4 Loading, hauling & unloading planks, logs, timber											
	a. First 10 m. haulage & piling	Cu.m	unskl	m-day	0.50							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.08							
	1.5 Loading, hauling and unloading cement and lime											
	a. First 10 m. haulage & piling	Cu.m	unskl	m-day	0.50							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.13							
	1.6 Loading, hauling & unloading boring tools, machines & materials paints, zinc sheet, oil, iron and crippled trucks											
	a. First 10 m. haulage & piling	Cu.m	unskl	m-day	0.50							
	b. For every additional 10 m	Cu.m	unskl	m-day	0.13							
	1.7 Loading, hauling & unloading iron rods required for main beam, bridge deck slab											
	a. First 10 m. haulage & piling	Cu.m	unskl	m-day	1.11							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.364							
	1.8 Loading , hauling & unloading water											
	a. First 10 m. haulage & Collection	Cu.m	unskl	m-day	2.00							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.50							
	2. hauling by wheel barrow.											
	2.1 Loading , hauling unloading clay, & soils											
	a. First 10 m. haulage & piling	Cu.m	unskl	m-day	0.20							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.13							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
22	2.2 Loading, hauling & unloading pebbel, gravel and aggregates.											
	a. First 10 m. piling	Cu.m	unskl	m-day	0.50							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.10							
	2.3 Loading, hauling, & unloading rubble, block stone & dresses stone.											
	a. First 10 m. & piling	Cu.m	unskl	m-day	0.67							
	b. For every additional 10 m.	Cu.m	unskl	m-day	0.143							
	3. (See sheet nr 22.3 at the bottom of the page)											3% of labour cost for T&P
	4. material collection & haulage. -											
	a. Collection & screening of river sand & hauling assuming that a porter carry 40 kg. & can walk up to 13 km. everyday	Cu.m	unskl	m-day	40.00							
	b. Collection or broken stone or river bed stone & hauling	Cu.m	unskl	m-day	60.00							
	c. Collection & screening of aggregates & hauling.	Cu.m	unskl	m-day	80.00							
	d. Breaking 13 mm. to 19 mm. aggregates & hauling	Cu.m	unskl	m-day	120.0							
	e. Hauling by mules at the rate of 72 kg. up to 13 km. dist. everyday.	Cu.m	unskl	m-day	20.00							
	f. Hauling sand & pebbles form river											
	- up to 5 km. dist.	Cu.m	unskl	m-day	20.00							
	- for 5 to 8 km. dist.	Cu.m	unskl	m-day	40.00							
	- for 8 to 13 km. dist.	Cu.m	unskl	m-day	40.00							
	- for 13 to 15 km. dist.	Cu.m	unskl	m-day	60.0							

23.3 Hauling Timber pole by porter

First 10 m.distance loading, hauling & unloading by porter	0.5 man day/m3
For every additional 10 m. distance	0.08 man day/m3
Hauling by porter for first 1000m. distance (7.5 X0.08X99)	8.42 man day/m3
Hauling by porter for every additional 1000m. distance (0.08 man day/m3 X 100)	8.00 mand day/m3
Hauling by porter for first 5000m. (8.42 X 4 X8)	40.42 man day/m3

If two Nr. labours are required for carrying a piece of pole, the mandays should be mutiplied by the coefficient given below. For calculation take 20 kg. of weight for a man if the pole length is 3m. and 25 kg. if the pole length is 4.6m.

S.No.	Total Nr. of labour	Pole length 4.6 m. coefficient	Pole length 6m. coefficient
1	4	1.05	1.10
2	6	1.10	1.15
3	8	1.20	1.30
4	10	1.35	1.40
5	12	1.65	1.55
6	14	1.85	1.70
7	16	2.20	2.00

S.N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
22.	3.g Hauling pipe by porters. distance which a porter co-vers everyday with a pipe load of 25 kg. - First day 13 km. - Second day 26 km. - Third day 39 km. - Fourth day 52 km. - Fifth day 65 km. - Sixth day 77 km. - Seventh day 89 km. - Eight day 101 km. - Ninth day 113 km. - Tenth day 125 km. - Elenventh day 136 km. - Twelvth day 147 km. - Thirteen day 158 km. - Fourteenth day 169 km. - Fifteenth day 180 km.											

23. Canal Lining

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
23	1. Laying 300 mm. thick filter layer of 75 mm. to 6 mm. stone aggregates in canal bed incl. haulage up to 10m. distance	Cu.m	skill unskl	m-day m-day	0.35 0.53	Filter aggrts.	Cu.u	1.0				
	2.Laying 150 mm. thick filter layer of 75 mm to 6 mm. sotne aggregates in canal sides incl. haulage up to 10 m. distance & lift 1.5m .	Cu.m	skill unskl	m-day m-day	0.44 0.66	Filter aggrts.	Cu.m	1.0				Additional 25% labour has been taken for working in casal slopes
	3. Laying 75 mm. thick layer of sand filter in canal bed and sides incl. sprinkling water, compaction, levelling, dressing, etc, complete (F.M. of sand is greater than 1.25) haulage up to 10m. and lift up to 1.5m	Cu.m	unskl	m-day	1.41	Sand	Cu.m	1.0				
	4.Supplying well graded filter aggregates of size 20 mm and less and laying underneath of canal lining for drain incl. haulage up to 10 m and lift 1.5m.											
	5. 300 mm thick (av.) boulder pitching on filter aggregates incl. haulage up to 100m. & lift 1.5m.											
	a. In canal bed	Cu.m	skill unskl	m-day m-day	0.71 2.12	Boulder	Cu.m	1.0				
	b. In canal sies (slopes)	Cu.m	skill unskl	m-day m-day	0.88 0.65	Boulder	Cu.m	1.0				
	6. Laying 10mm. thick layer of tiles of burnt soils (the size of each tile is (300 mm. X 150mm. X 5 mm.) in the canal floor in 1:5 cement sand mortar incl. filling the tile joints by the same grade of mortar (1:5) 20 mm. thick plastering on it, soaking tiles, curing, providing forms etc. complete,	10 Sq.m	skill unskl	m-day m-day	5.0 5.0	Tile Cement Sand	Nr. M.T. Cu.m	222.0 0.155 0.41				
	7. Laying tow layers of tiles on canal sides on sand filter (the tile is made form burnt soils & the size of each tile is (300 mm. X 150 mm. X 50 mm.) having one layer of 10 mm. thick laid in 1:5 cement sand mortar & second layer tiles attached on it incl. filling of the tile joints by the 1:3 cement sand mortar, providing forms, soaking tiles, curing etc. all works complete	10 Sq.m	skill unskl	m-day m-day	10.0 10.0	Tile Cement Sand	Nr. M.T. Cu.m	444.0 0.565 1.64				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
23	8. Average 300 mm. thick boulder pitching in cement mortar in canal lining works including haulage of materials up to 30 m. and lift 1.5 m.											
	a. Cement mortar 1:3	10 Sq.m	skill unskl	m-day m-day	4.65 13.0	Cement Sand Stone	M.T. Cu.m Cu.m	0.56 1.26 3.00				
	b. Cement mortar 1:4	10 Sq.m	skill unskl	m-day m-day	4.65 13.0	Cement Sand Stone	M.T. Cu.m	0.48 1.35				
	9. Canal lining by laying one layer of slate of size 300 mm. X 300 mm. and pointing the joints by 1:3 cement sand mortar incl. haulage of construction materials up to 30 m. & lift 1.5 m.											
	a. Thickness of slate 25mm.	10 Sq.m	skill unskl	m-day m-day	2.0 3.0	Slate Cement Sand	Nr. M.T. Cu.m	125 0.009 0.018				
	b Thickness of slate 50 mm.	10 Sq.m	skill unskl	m-day m-day	2.40 3.6	Slate Cement Sand	Nr. M.T. Cu.m	125 0.017 0.036				
	10. Plastering (10 mm. thick) by 1:3 cement mortar & laying second layer of slate on it with 1:3 cement mortar pointing at their joints on the surface of canal finished as in 23.9(a) & 9(b)											
	a. Thickness of slate 25 mm.	10 Sq.m	skill unskl	m-day m-day	3.50 5.0	Slate Cement Sand	Nr. M.T. Cu.m	125 0.015 0.030				
	b. Thickness of slate 50mm.	10 Sq.m	skill unskl	m-day m-day	3.90 5.60	Slate Cement Sand	Nr. M.T. Cu.m	125 0.023 0.049				
	11. Lining canal by 150 mm. thick cement concrete incl. laulage of materials up to 30m. & lift 1.5 m.											
	a. Concrete of ratio 1:2:4	10 Sq.m	skill unskl	m-day m-day	1.0 8.0	Cement Sand Aggrts.	M.T. Cu.m Cu.m	0.48 0.66 1.30				
	b. Concrete of ratio 1:3:6	10 Sq.m	skill unskl	m-day m-day	1.0 8.0	Cement Sand Aggrts.	M.T. Cu.m Cu.m	0.33 0.72 1.35				
	12. Laying plastic sheet in the designed shape of canal and inserting edges of plastic in side banks of canal before laying other types of canal lining works.	10 Sq.m	skill	m-day	0.30	Plastic sheet	Sq.m	12.0				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
23	13. Filling by bitumen mortar in the 10mm. wide joints in canal lining											
	a. Single layer 80mm. thick lining.	10 Sq.m	skill unskl	m-day m-day	0.50 0.50	Bitumen Fuel	Kg. -	1.06 Approx				
	b. double layer 131mm. thick lining.	10 Sq.m	skill unskl	m-day m-day	0.70 0.35	Bitumen Fuel	Kg. -	1.73 Approx				
	14. Making intake well for drain incl. leaving space for pipe, fixing bolt, providing forms. etc. complete in the canal lined by 1:2:4 concrete. Concrete 0.10cu.m.	Each	skill unskl	m-day m-day	0.20 0.30	Aggrts. sand Cement Bolt	cu.m cu.m M.T. Kg.	0.088 0.045 0.023 2.50				
	15. Supplying and fitting 150mm. dia. vertical nonreturn valve incl. nutbolt, base plate. etc. complete.	Each	skill unskl	m-day m-day	0.75 0.50	Valve	Nr.	1.00				
	16. Supplying and fitting 50mm. dia. vertical nonreturn pocket valve incl. nutbolt, base plate. etc. complete.	Each	skill unskl	m-day m-day	0.50 0.50	Valve	Nr.	1.00				
	17. Supplying perforated concrete pipe & making. 150mm dia.	Each	skill unskl	m-day m-day	0.10 0.20	Perfo. concrete pipe	M.	1.00				

24. Iron & Other Works.

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
24	1.1 Making 3mm X 20mm. iron grill & fixing including cleaning by sand paper, applying aluminium paint etc. complete.	10 sq.m				3X20 mm. grill & fixing Incl. making	sq.m	10.00				Includes wages also
	1.2 Making 4.5mm X 20mm. iron grill & fixing including cleaning by sand paper, applying aluminium paint etc. complete.	10 sq.m				4.5X 20 mm. grill & fixing	sq.m	10.00				" "
	2. Making iron rolling shutter gate and fixing incl. painting & wages complete.	10 sq.m				Iron rolling shutter	sq.m	10.00				
	3. Making iron gate and fixing incl. painting & wages complete.	10 sq.m				Iron gate	sq.m	10.00				
	4. Iron collapsible gate making and fixing incl. painting & wages complete.	10 sq.m				Iron Collapse gate	sq.m	10.00				
	5. Making tubular truss and fixing complete	10 sq.m				Incl. making & fixing tubular truss						
	6. G.I. barbed wire fencing.	100 r.m	skill unskl	m-day m-day	1.076 5.38	Barded wire Nails& hooks	m -	110.0 Approx				
	7. Barbed wire fencing works with five rows & two diagonal barbed wires and column at 3m. spacing. Size of timber column is 75mm. X 100mm. X 2.1mm.	30m.	skill unskl	m-day m-day	1.0 2.0	Salwood Barbed wire U-hooks	Cu.m m Nr	0.19 250.0 77.0				

25. Suspension bridge related works.

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
25	1. Fabrication	kg.	skill	m-day	0.061							
	1.1 Fabrication of bridge parts		semi-skill	m-day	0.085							
	a. Suspension bridge		unslk	m-day	0.110							
	b. Suspended bridge (drum type)	kg.	skill	m-day	0.052							
			semi-skill	m-day	0.073							
			unslk	m-day	0.092							
	c. Suspended bridge (open type)	kg.	skill	m-day	0.055							
			semi-skill	m-day	0.073							
			unslk	m-day	0.011							
	d. Truss bridge	kg.	skill	m-day	0.050							
			semi-skill	m-day	0.070							
			unslk	m-day	0.100							
	1.2 Rust proofing by applying various types of paints.											Painting per
	a. Surface preparation	sq.m	skill	m-day	0.010							Sq.m of surface area.
			semi-skill	m-day	0.15							
	b. Applying first and second coat of paint	sq.m	skill	m-day	0.073							
			semi-skill	m-day	0.100							
			unslk	m-day	0.138							
	c. Applying finishing coat of paint	sq.m	skill	m-day	0.085							
			semi-skill	m-day	0.122							
			unslk	m-day	0.183							
	2. Loading, unloading and preparation works.	M.T.	Supvsr.	m-day	1.00							
			unskl	m-day	4.00							
	3. Preparing loads for carrying them up to airport (for every flight)											
	a. Loading works	M.T.	Supvsr.	m-day	1.50							
			unskl	m-day	7.50							
	b. Unloading works	M.T.	Supvsr.	m-day	0.50							
			unskl	m-day	3.00							
	4. Establishing intermediate store on rent & hiring a watch man (both per month basis)	Each month	watch man	m-day	30.00							
	5. - a. Establishing camp	sq.m	unskl	m-day	5.00							
	b. Repair of bridge	sq.m	unskl	m-day	3.00							
	6. Shifting camp every month in a const. period	month	Spvsr.	m-day	30.00							
			unskl	m-day	120.0							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
25	1. Fabrication	kg.	skill	m-day	0.061							
	1.1 Fabrication of bridge parts		semi-skill	m-day	0.085							
	a. Suspension bridge		unslk	m-day	0.110							
	b. Suspended bridge (drum type)	kg.	skill	m-day	0.052							
			semi-skill	m-day	0.073							
			unslk	m-day	0.092							
	c. Suspended bridge (open type)	kg.	skill	m-day	0.055							
			semi-skill	m-day	0.073							
			unslk	m-day	0.011							
	d. Truss bridge	kg.	skill	m-day	0.050							
			semi-skill	m-day	0.070							
			unslk	m-day	0.100							
	1.2 Rust proofing by applying various types of paints.											Painting per Sq.m of surface area
	a. Surface preparation	sq.m	skill	m-day	0.010							
			semi-skill	m-day	0.15							
	b. Applying first and second coat of paint .	sq.m	skill	m-day	0.073							
			semi-skill	m-day	0.100							
			unslk	m-day	0.138							
	c. Applying finishing coat of paint	sq.m	skill	m-day	0.085							
			semi-skill	m-day	0.122							
			unslk	m-day	0.183							
	2. Loading, unloading and preparation works.	M.T.	Supvsr.	m-day	1.00							
			unskl	m-day	4.00							
	3. Preparing loads for carrying them up to airport (for every flight)											
	a. Loading works	M.T.	Supvsr.	m-day	1.50							
			unskl	m-day	7.50							
	b. Unloading works	M.T.	Supvsr.	m-day	0.50							
			unskl	m-day	3.00							
	4. Establishing intermediate store on rent & hiring a watch man (both per month basis)	Each month	watch man	m-day	30.00							
	5. - a. Establishing camp	sq.m	unskl	m-day	5.00							
	b. Repair of bridge	sq.m	unskl	m-day	3.00							
	6. Shifting camp every month in a const. period	month	Spvsr.	m-day	30.00							
			unskl	m-day	120.0							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
25	11.3 Dry & soft rocks											
	a. Up to 2 m. deep	Cu.m	unskl	m-day	2.20							
	b. Up to 4 m. deep	Cu.m	unskl	m-day	2.60							
	c. Up to 6 m. deep	Cu.m	unskl	m-day	3.00							
	d. more than 6 m. deep	Cu.m	unskl	m-day	3.45							
	11.4 Dry & hard rocks (Without blasting)											
	a. Up to 2m. deep	Cu.m	unskl	m-day	25.20							
	b. Up to 4m. deep	Cu.m	unskl	m-day	25.60							
	c. Up to 6m. deep	Cu.m	unskl	m-day	26.00							
	e. more than 6 m. deep	Cu.m	unskl	m-day	26.45							
	11.5 Dry & hard rocks (with blasting)											Blaster is assumed as skilled labour.
	a. Up to 2m. deep	Cu.m	unskl	m-day	4.76							
			Blaster	m-day	0.05							
	b. Up to 4m. deep	Cu.m	unskl	m-day	5.16							
			Blaster	m-day	0.05							
	c. Up to 6m. deep	Cu.m	unskl	m-day	5.76							
			Blaster	m-day	0.05							
	d. more than 6m. deep	Cu.m	unskl	m-day	6.20							
			Blaster	m-day	0.05							
	11.6 Foundation excavation under shallow water in common soils.											
	a. Up to 2m. deep	Cu.m	unskl	m-day	2.25							
	b. Up to 4m. deep	Cu.m	unskl	m-day	4.20							
	c. Up to 6m. deep	Cu.m	unskl	m-day	2.65							
	d. more than 6m. deep	Cu.m	unskl	m-day	3.50							
	12. Dewatering of foundation 24 hr. pump Nr.	Pump Nr.	skill	m-day	0.15							
			semi-skill	m-day	0.10							
	13. R.C.C Works											
	a. In 1:2:4 concrete mix	Cu.m	skill	m-day	1.50							
			unskl	m-day	7.50							
	b. In 1:1.5:3 concrete mix.	Cu.m	skill	m-day	1.50							
			unskl	m-day	7.50							
	14.1 Plum concrete works 40% 60% mass concrete (1:3:6) + 40% boulder of 225 mm. size incl. washing of boulder.	Cu.m	skill	m-day	0.50							
			unskl	m-day	4.00							

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
25	14.2 Plum concrete works 60% 40% mass concrete (1:3:6) + 60% boulder of 225 mm. size incl. washing of boulder	Cu.m	skill unskl	m-day m-day	0.50 4.50							
	15. Formwork: Making beam & planks form available wood incl. felling trees, cutting out to measured size, converting them to beams and planks by using available means such as axes (etc.)	Cu.m	skill semiskl unskl	m-day m-day m-day	0.50 30.00 15.00							
	16. Formwork : for planks	sq.m	skill unskl	m-day m-day	0.10 0.10							
	17. Plastering works using 1:3 & 1:4 cement sand mortar incl. making mortar and adding water.	sq.m	skill unskl	m-day m-day	8.00 24.00							
	18. Installing anchorage parts, pipe & railing.	Cu.m	skill unskl	m-day m-day	4.00 8.00							
	19. Installing anchorage in rocks uncl. drilling hole in rock & placing anchor in 1:1 cement mortar.											
	19.1 In sort rock	m	semiskl unskl	m-day m-day	0.16 0.16							
	19.2 In hard rock	m	semiskl unskl	m-day m-day	0.225 0.225							
	20. Placing high density pipe in concrete	m.	unskl	m-day	0.1							
	21. Tower or truss erection works a. Ht. of tower < 15m.	m.	skill unskl	m-day m-day	1.50 8.00							
	b. Ht. of tower 15m. -25 m.	m.	skill unskl	m-day m-day	1.75 10.00							
	c. Ht. of tower >25m.	m.	skill unskl	m-day m-day	2.00 14.00							
	22. Scaffolding (machan) works	m.	semiskl unskl	m-day m-day	0.50 3.00							
	23. Suspender, cross beam, wind bracing flats. a. In suspension bridge	m.	semiskl unskl	m-day m-day	1.50 2.25							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
25	23.b. In suspended bridge.	m	semiskl	m-day	1.10							
			unskl	m-day	1.90							
	0.1 suspended		unskl	m-day	1.1							
	0.2 suspended		unskl	m-day	1.9							
	24. Felling tree & dressing.											
	a. Making plank & nailing .	cu.m	skill	m-day	0.50							
			semiskl	m-day	35.00							
			unskl	m-day	19.00							
	b. Applying coal tar (0.2)	cu.m	semiskl	m-day	5.10							
	c. Plank rot works. (0.10)	cu.m	skill	m-day	3.30							
			unskl	m-day	5.80							
	25. Placing wire mesh	m.	semiskl	m-day	0.05							
			unskl	m-day	0.25							
	26. Load testing works in suspension bridge re-tightining clamp, bulldog grip & nut, etc.	m.	semiskl	m-day	0.10							
			unskl	m-day	0.054							
	27. Anti-rust works.											
	a. By applying coal tar (0.1)	m.	semiskl	m-day	0.015							
	b. By applying coal tar to non- galvanized thread.	m.	semiskl	m-day	0.03							
			unskl	m-day	0.12							
	28. Applying coal tar to non galvanized thread of suspended bridge.	m.	semiskl	m-day	0.02							
			unskl	m-day	0.07							
	29. Repainting of steel of constructed bridge											
	a. In suspension bridge,	sq.m	semiskl	m-day	0.25							
			unskl	m-day	0.20							
	b. In suspended bridge	sq.m	semiskl	m-day	0.22							
			unskl	m-day	0.19							
	30. Aforestation works of slope incl. planting watering & clearing grasses.	sq.m	semiskl	m-day	0.02							
	31. Construction form grasses leaves etc. such as fencing works.	m	unskl	m-day	0.10							

26. Electrificationind

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinary			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
26	1. Fixing Main Switch in wooden box or in the wall as per drawing and connecting to electricity supply if single and three phase of following amperes, all complete.					Main Control Switch Wooden Box Grips Screws	Lot. Nr. Nr. Nr.	1 1 5 5				in case of size of main switch according to requirement
	a. 15-100 amperes	per job	skill Semiskl	m-day m-day	0.50 1.00	If, underground, then cement mortar mix and paint	as reqd.					reqd.= required
	b. 100-400 amperes	per job	skill Semiskl	m-day m-day	1.00 1.00							
	c. above 400 amperes	per job	skill Semiskl	m-day m-day	1.50 3.00							
	2. Connecting Busbar Strips in metal box panel board of single or three phase according to the drawings to incoming and outgoing lines by cable shoe & also connecting ampere-volumeter, C.T. transformer, selector switches etc. all complete of the amperes as give below.					Bushbar strips Cable Shoe Other equipment bus stand nut bolts flexible wire	Lot nos. as per drawing " " m	2 or 4 10 or more " " "				
	a. 30-100 amperes	per job	skill Semiskl	m-day m-day	1.00 2.00							
	b. 100-600 amperes	per job	skill Semiskl	m-day m-day	1.50 3.00							
	c. above 600 amperes	per job	skill Semiskl	m-day m-day	2.00 4.00 2.00							
	3. Fixing Distribution Boards according to drawings of metal box or wooden box inclusive of MCB or kitkat and connecting to electrical supply of different capacity or house type as given below, all complete.					Box MCB or Kitkat Grip screws, if underground, then cement mortar mix and paint	Lot Lot Nr. as reqd.	1 according to house 6				
	a. Upto 6 houses concealed	per job	skill Semiskl	m-day m-day	0.50 0.75							
	b. 6 to 9 houses concealed	per job	skill Semiskl	m-day m-day	0.50 1.00							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
26	3 c. Upto 6 houses surface	per	skill	m-day	0.50							
		job	Semiskl	m-day	0.50							
	d. 6 to 9 houses -surface	per	skill	m-day	0.50							
		job	Semiskl	m-day	0.75							
	4. Fixing Lighting Fixtures according to drawings inclusive of different main switch (surface or concealed) and supplying electricity, all complete .											
	a. Dome or wall light, hanging light, spot display, ceiling tube, bulb bulk head, electrical bell, wall fan MLL chandelier upto 6 bulbs.	per	skill	m-day	0.50	Light	Lot	1				
		10	Semiskl	m-day	0.50	Woodenblock	Nr.	1				
						Grips	Nr.	4				
						Screws	Nr.	4				
						Pipe or chain	m	0.5				
						Ceiling rose	nr.	1				
	b. Good quality tubelight pipe or fixing chain on ceiling, garden light, main gate light, posttop lantern, street light, chandelier light (6-10) bulbs, concealed tubelight.	per	skill	m-day	1.0	Cement mortar mix and paint	as reqd					
		10	Semiskl	m-day	1.0	hook	Nr.	1				
						Sockets	Lot	1				
	5. Fixing Sockets according to drawings and connecting to electricity					Box	Nr.	1				
						Grips	Nr.	4				
						Screws	Nr	4				
	a. Concealed electrical sockets	per	skill	m-day	1.00	if, underground,	as reqd					
		10	Semiskl	m-day	2.00	then cement mortar mix						
	b. Surface electrical sockets	per	skill	m-day	0.50	and paint						
		10	Semiskl	m-day	1.00							
	c. Concealed telephone sockets.	per	skill	m-day	1.00							
		10	Semiskl	m-day	3.00							
	d. Surface telephone sockets.	per	skill	m-day	0.50							
		10	Semiskl	m-day	1.00							
						Fan	Lot	1				
	6. Fixing different type of Fans accorking to drawings and their switch as concealed or surface and supplying electricity, all complete.					Ceiling rose	Nr.	1				Hanged to iron hook
						Wooden block	Nr.	1				
						Grips&Screws	as reqd					
		per	skill	m-day	0.50	Iron hook	Nr.	1				
		1	Semiskl	m-day	0.50	wooden box	Nr.	1				
	a. Ceiling fan					wooden frame	Nr	1				
		per	skill	m-day	0.25							
		1	Semiskl	m-day	0.25							
	b. Wall fan											
		per	skill	m-day	1.00							
		1	Semiskl	m-day	1.00							
	c. Exhaust fan											

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
26	7. Fixing Earthing System according to drawing and connecting to electrical equipment power points or main switch all complete.	per 1	skill Semiskl unskl	m-day m-day m-day	0.20 1.50 2.00	Earthwork Excavation etc.	m. 1.5above					
	8. Supply and fixing street Lighting pole according to drawings; all complete.					Pole Cement concrete	Lot as rqd.	1				
	a. Wooden pole upto 8.0m	per 1	skill Semiskl unskl	m-day m-day m-day	0.20 0.40 2.00	earthwork excavation inspection box varnish paint	m Nr. as rqd. as rqd.	> 1 in depth 1				
	b. Steel tubular pole 8.0m	per 1	skill Semiskl unskl	m-day m-day m-day	0.33 0.66 0.30	nut bolts						
	c. Steel tubular pole heavy gauge upto 10.4m.	per 1	skill Semiskl unskl	m-day m-day m-day	0.50 1.00 5.00							
	9. I. Surface point Wiring according to drawings inclusive of stretching wire, drilling into wall or ceiling for fixing grips/ skew/ lee stick/ clips/ nails to a particular light via ceiling rose box and fixing & painting; all complete.					wire lee stick grips screws nail link clip varnish paint	as per requirement					
	a. Light Circuit											
	(i) Short length (5m)	per 10	skill Semiskl unskl	m-day m-day m-day	1.00 2.00 1.00							
	(ii) Medium length (5-10m)	per 10	skill Semiskl unskl	m-day m-day m-day	1.00 3.00 2.00							
	(iii) Long length (11-15m)	per 10	skill Semiskl unskl	m-day m-day m-day	1.50 3.00 3.00							
	(iv) Extra long length (above 16m)	per 10	skill Semiskl unskl	m-day m-day m-day	2.00 3.00 4.00							
	b. Power circuit or Telephone Circuit											
	(i) Short length (5m)	per 10	skill Semiskl unskl	m-day m-day m-day	1.00 3.00 2.00							
	(ii) Medium length (6-10)	per 10	skill Semiskl unskl	m-day m-day m-day	1.00 3.00 3.00							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
26	9 I.(b) (iii)Long length (11-15)	per 10	skill Semiskl unskl	m-day m-day m-day	2.00 3.00 4.00							
	(iv) Extra long length (above 10m)	per 10	skill Semiskl unskl	m-day m-day m-day	2.00 4.00 4.00							
	9. II. Concealed Pointwiring while constructing new house, according to drawing, placing HD polythene pipe while concreting and fixing its switch board via ceiling rose box; all complete.					Polythene pipe Circular box clamps hook, nails, etc.	As per requirement					
	(a) Light circuit											
	(i) Short length (5m)	per 10	skill Semiskl unskl	m-day m-day m-day	1.00 3.00 2.00							
	(ii) medium length (6-10m)	per 10	skill Semiskl unskl	m-day m-day m-day	1.50 3.00 2.00							
	(iii) Long length (11-15m)	per 10	skill Semiskl unskl	m-day m-day m-day	1.50 3.00 4.00							
	(iv) Extra long length (above 16m)	per 10	skill Semiskl unskl	m-day m-day m-day	2.00 4.00 4.00							
	(b) Power circuit or telephone circuit											
	(i) Short length (5m)	per 10	skill Semiskl unskl	m-day m-day m-day	1.50 3.00 3.00							
	(ii) Medium length (6-10m)	per 10	skill Semiskl unskl	m-day m-day m-day	2.00 3.00 4.00							
	(iii) Long length (11-15m)	per 10	skill Semiskl unskl	m-day m-day m-day	2.00 4.00 4.00							
	(iv) Extra long length (above 16m.)	per 10	skill Semiskl unskl	m-day m-day m-day	3.00 4.00 4.00							
	9. III Concealed Pointwiring in the old building as per drawing: by making grooves in ceiling, walls or surface and placing HD polythene pipe by means of hook, nails and finishing with cement mortar mix and paint inclusive of fixing its switch via ceiling rose box; all complete.											

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
26	a. Light Curcuit											
	(i) Short length (5m)	per	skill	m-day	1.50							
		10	Semiskl	m-day	3.00							
			unskl	m-day	3.00							
	(ii) Medium length (6-10m)	per	skill	m-day	2.00							
		10	Semiskl	m-day	3.00							
			unskl	m-day	4.00							
	(iii) Long length (11-15)	per	skill	m-day	2.00							
		10	Semiskl	m-day	4.00							
			unskl	m-day	4.00							
	(iv) Extra long length (above 16m.)	per	skill	m-day	3.00							
		10	Semiskl	m-day	4.00							
			unskl	m-day	4.00							
	(b) (b) Power circuit or telephone circuit											
	(i) Short length (5m)	per	skill	m-day	2.00							
		10	Semiskl	m-day	3.00							
			unskl	m-day	4.00							
	(ii) Medium length (6-10)	per	skill	m-day	2.00							
		10	Semiskl	m-day	4.00							
			unskl	m-day	4.00							
	(iii) Long length (11-15)	per	skill	m-day	3.00							
		10	Semiskl	m-day	4.00							
			unskl	m-day	4.00							
	(iv) Extra long length (above 16m.)	per	skill	m-day	4.00							
		10	Semiskl	m-day	5.00							
			unskl	m-day	5.00							
	10. Power cable wiring as per drawings and connecting to electricity supply, the type and methods as follows;					cable grip, nails screws. clamps etc.	rm as per rqd.	10				
	a. Simple method using clamps on the wall											
	(i) 2.5-10.00mm square	10	skill	m-day	0.50							
		rm	Semiskl	m-day	0.50							
	(ii) 16.0-35.0mm square	10	skill	m-day	0.50							
		rm	Semiskl	m-day	1.00							
	(iii) above 50.00 mm square	10	skill	m-day	0.50							
		rm	Semiskl	m-day	1.00							

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
26	b. Concealed wiring in brick wall as per drawing by chiselling groove in ceiling, wall or floor and supporting by clamp, nails etc. and finishing it with cement mortar mix and paint all complete.					cable grip, nails screws, clamps etc	rm as per rqd.	10				
	(i) 2.50- 10.00 mm square	10 rm	skill semiskl	m-day m-day	0.50 1.00							
	(ii) 16.0-35.00mm square	10 rm	skill semiskl	m-day m-day	0.50 1.50							
	(iii) above 50.00mm square	10 rm	skill semiskl	m-day m-day	0.50 2.00							
	c. Excavation trench or groove according to drawings and placing cable					Cable trench depth	rm rm	10 0.5				
	(i) 2.50- 10.00mm square	10 rm	skill semiskl unskl	m-day m-day m-day	0.50 0.50 1.00							
	(ii) 16.0-35.00mm square	10 rm	skill semiskl unskl	m-day m-day m-day	0.50 0.50 1.50							
	(iii) above 50.00mm square	10 rm	skill semiskl unskl	m-day m-day m-day	0.50 0.70 2.00							
	11. PVC copper wiring as per drawings, the type and methods as follows along with varnish paint all complete. a. Surface wiring as per drawings using grips, skew, lee stick, link, clips, nails, etc. and connecting to main switch and to relevant light and equipments.					wire lee stick, pipe grips, screws clamp clipnail	rm rm lot Nr.	100 100 600 250				
	(i) 1.50- 4.00 mm square	100 rm	skill semiskl unskl	m-day m-day m-day	0.50 0.75 1.15							
	(ii) 6.0-16.0 mm square	100 rm	skill semiskl unskl	m-day m-day m-day	0.75 0.30 1.50							
	(iii) 25.0 -35.0 mm square	10 rm	skill semiskl unskl	m-day m-day m-day	1.00 1.50 2.00							

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
26	11 b. Concealed wiring using HDP polythene pipe as per drawing by chiseling ggorve in ceiling, wall or floor and by supporting by clamp nails etc. with connection to light switch or electrical equipement and finishing if with cement mortar mix and paint all complete .					wire pipe clamps, nails	rm rm as per red.	100 100				
	(i) 1.50 -4.00 mm square	100 rm	skill semiskl unskl	m-day m-day m-day	0.75 1.30 1.20							
	(ii) 6.0-16.0 mm square	100m	skill semiskl unskl	m-day m-day m-day	1.00 1.50 2.00							
	(iii) 25.0-35.0 mm square	100 rm	skill semiskl unskl	m-day m-day m-day	1.50 2.00 3.00							
	(iv) 50mm square	100 rm	semiskl unskl	m-day m-day	2.50 3.50							
	12. Stringing ACSR conductor to poles and fixing necessary accessories like arm, tuss, insulator, etc. and connecting it to main electricity supply, all complete.					Conductor arm tuss Insulator nutbolt clamps etc.	km lot lot as per rqd.	1 1 4				
	a. 0.03 sq. inch. Weasel ACSR	4x250 rm	skill unskl	m-day m-day	4.64 22.40							
	b. 0.05 sq inch Dog ACSR	4x250 rm	skill unskl	m-day m-day	5.60 22.80							
	c. 0.10 sq. inch Dog ACSR	4x250 rm	skill unskl	m-day m-day	- -							
	13. Fixing Electrical Light Switch as per drawing either surface or concealed using box and supplying electricity, all complete	per 10				switch plate box nails, screws & grips grooves for concealed	lot nr. lot nr.	10 10 40 10				
	a. 1-5 houses -surface	per 10	skill unskl	m-day m-day	0.5 1.0							

S.N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty	
26	13. b. 6-8 houses- surface	per	skill	m-day	1.0							
		10	unskl	m-day	2.0							
	c. 1-5 houses-concealed	per	skill	m-day	0.5							
		10	unskl	m-day	1.0							
	d. 6-8 houses-concealed	per	skill	m-day	1.00							
		10	unskl	m-day	2.0							
	e. Switch-dimmer surface type	per	skill	m-day	0.5							
		10	unskl	m-day	1.0							
	f.Switch-dimmer concealed type	per	skill	m-day	1.0							
		10	unskl	m-day	2.0							

27. Bio-Engineering Works

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
27.	1. Collection and preparation of seeds.											
	a. Collection of grass seeds form sources within 1km. of the road, including separating & preparing seed for storage, and drying seed in the sun.	Kg.	unskl	m-day	1.50	Sealed bag	Nr.	1.00	Khukuri	-	3% of labour cost	
	b. Collection of large shrub seeds (eg. form source within 1 km. of the road including seed preparation for storage after drying.	Kg.	unskl	m-day	0.45	-		-	Khukuri	-	3% of labour cost	
	c. Collection of medicum-sized shrub sheeds (eg. keraukose form sources within 1 km. of the road, including seed preparation for storage after drying	Kg.	unskl	m-day	0.75	Sealed bag	Nr.	1.00	Nanglo	-	3% of labour cost	
	d. Collection of medium-sized shrub and tree seeds (eg. areri, khayer, ghobre and rani salla, sisau) form sources within 1 km. of the road, including sees preparation for storage after drying.	Kg.	unskl	m-day	0.95	Sealed bag	Nr.	1.00	Nanglo	-	3% of labour cost	
	e. collection of small shrub and tree sees, (eg. dhanyero, dhusun, 1 km. of the road, including sees preparation for storage after drying.	Kg.	unskl	m-day	2.50	Sealed bag	Nr.	1.00	Nanglo	-	3% of labour cost	
	2. Collection of grass and hardwood cuttings for vegetative propogation.											
	a. Collection of grass clumps (eg. amliso, kans, kher) form sources within 1 km. of the road make slips for multiplication in the nursery.	1000 slips	unskl	m-day	1.50	Adequate supply of appropiate clumps			Kodalo	-	3% of labour cost	
						Hessian Jute	m^2	6.00				
	b. Collection of cutting of small bamboos (eg. padang baans, lite nigalo bans), suitable for traditional planting, form sources within 1 km. of the road Material minimum 10 cm. of rooted rhizome and 90 cm. of culm.	1000 Nr.	unskl	m-day	3.00	Adequate supply of appropriate			Kodalo Khukuri	- -	3% of labour cost	
						Bamoos	nr.	10.0				
						Hessian Jute	m^2	5.00				

S. N.	Description of work	unit	Resources										Remarks
			Labour			Constr. Materials			Machinery				
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.		
27.	2.c. Collection of hardwood cuttings (eg. assuro, bains, kanda phul, namdi phul, saruwa, simali) from sources withn 1 km. of the road, Material minimum 30 cm. in length and 2 cm. in diameter.	1000 Nr.	unskl	m-day	0.85	Adequate supply of appropriate Bushes	-	-	Khukuri	-	3% of labour cost		
						Hessian jute	m^2	5.00					
	3. Nursery operation and management (bed preparation)												
	a. Construction of seed beds for tree seedlings, incl. materials for beds and shades. Bed is 1m. wide X17cm. high and made up of: 5cm of washed gravel, 5cm. of unsieved forest soil, 5cm of 1:3 mix of sieved forest soil and washed sand, 2cm of washed sieved and sterilised sand. (Add 5% to the number of bricks to allow for normal wastage.	$5m^2$	skill	m-day	1.50	Bamboo poles	Nr.	9.00	Khanti	-	3% of labour cost		
			unskl	m-day	2.00	Polythene Sheet	sq.m	9.00	shovel	-			
						Bricks	Nr.	96.0	Pickaxe	-			
						Gravel	Cu.m	0.25	Screen mesh	-			
						Unsieved soil	Cu.m	0.10					
						Line string	m.	13.0					
						Binding wire	kg.	3.00					
	b. Construction of stand out beds for tree seedlings in polypots, incl. materials for beds and shades. Bed is 100cm wideX 15cm. high, with a 5cm. layer of gravel placed above the compacted ground. (Add 5% to the number of bricks to allow for normal wastage.)	$5m^2$	unskl	m-day	6.00	Bamboo	Nr.	15.0	Khanti	-	3% of labour cost		
						Bricks	Nr.	96.0	shovel	-			
						Line string	m.	13.0	Pickaxe	-			
						Binding wire	kg.	3.00					
						Gravel	cu.m	0.25					
	c. Construction of beds for grass seeds, grass slips (ie, vegetative propagation and tree stool cuttings, incl. materials and hessian cover. Bed is 100cm.X 35cm. high and made up of: 5cm. of wasged gravel placed above the ground, 5cm of 1:1 mix of sieved soil and compost, and topped with 15cm. of 3:1 mix of sieved forest topsoil and washed sand.	$5m^2$	skill	m-day	1.00	Gravel	cu.m	0.38	shovel	-	3% of labour cost		
			unskl	m-day	1.50	Forest soil	cu.m	1.46	Pickaxe	-			
						Compost	cu.m	0.38					
						Washed sand	cu.m	0.46					
						Hessian Cover	sq.m	10.0					
	d. Construction of beds for propogation of bamboo culm cuttings, incl. materials and hessian cover. Bed is 100 cm wideX30cm high. The ground below the bed is dug to a depth of 30cm. Bed is made with 10cm. unsieved soil and 20cm. sieved soil. A bund 10cm. high is formed around the edge.	$5m^2$	unskl	m-day	2.00	Gravel	cu.m	0.38	shovel	-	3% of labour cost		
						Forest soil	cu.m	1.46	Pickaxe	-			
						Compost	cu.m	0.38	Klukuri	-			
						Bamboo poles	Nr.	6.00	Log saw	-			
						Hessian Jute	sq.m	25.0					

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
27.	4. Nursery operation and management (seed sowing and transplanting; planting hardwood cutting)											
	a.Tree seed sowing @ 10 grammes per m² (medium-sized seeds) of 2 grammes per m2 (very fine seeds) into seed beds treatment.	5m²	unskl	m-day	0.04	seed	g	50.0	Bowl Trowel	- -	3% of labour cost	
	b.Preaparing potting mix & filling polyposts, including all materials for container seedlings, (Note. 1 kg of 200 gauge polypots (4"X7"laid flat)= 464 bags 200 gauge black polythene is preferred)	100 Nos	unskl	m-day	10.0	Polypot Sand Soil Compost	Nos cu.m cu.m cu.m	1050 0.46 0.70 0.23	Sieve Shovel	- -	3% of labour cost	
	c. Direct sowing of tree seeds into polyppts including seed treatment, by sowing one seed in half the pots and two seeds in the other half.	1000 Nos	unskl	m-day	0.62	Seed	Nr.	1500	wooden peg	Nr	1.00	
	d. Pricking out tree seedlings & transplanting into beds.	100 Nos	unskl	m-day	0.18	-	-	-	wooden peg tray	Nr -	1.00 3% of labour cost	
	e. Pricking out tree seedling & transplanting into beds.	sq.m	unskl	m-day	0.12	-	-	-	wooden peg	Nr	1.00	
	f. Transplanting grass slips into beds, form clumps. Slips are planted at 10 cm. centres in rows 15 cm. apart.	100 Nos	unskl	m-day	0.12	Hessian jute	sq.m	0.30	Khukuri shovel	- -	3% of labour cost	
	g. Planting of hardwood cuttings of minimum 30 cm. length to 20 cm. depth into prepared beds. Cuttings spaced at 5 cm. cnetres within rows, with 20 cm. cbtween rows.	100 Nos	unskl	m-day	0.60	Hardwood cuttings	Nr.	1000	khanti	-	3% of labour cost	
	5. Preparation of raised materials for extraction form the nursery.											
	a. Grass culm cutting production form nursery stock: single or double node (eg. napier)	100 Nos	unskl	m-day	0.70	Hessian jute	sq.m	2.70	khukuri	-	3% of labour cost	
	b.Uprooting and preparing grass slips ready for site planting form nursery seedlings.	1000 Nos	unskl	m-day	0.63	Hessian jute	sq.m	1.35	fork pick axe khukuri	- - -	3% of labour cost	

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
27.	5.c. Uprooting and preparing grass slips ready for site planting from nursery grass clumps raised from slips by vegetative propagation.	1000 Nos	unskl	m-day	0.33	Hessian jute	sq.m	4.20	Shovel Khanti	-	3% of labour cost	
	(6) Compost and mulch production											
	a. Mulch production by collection and cutting of weeds and other vegetation such as tite pati, banmara etc, within 1km. of the road, and stacking along roadside.	m^2	unskl	m-day	1.20	-	-	-	Hasiya DOKO	- -	3% of labour cost	
	b. Compost production by collection and cutting of weeds and other vegetation such as tite pati, banmara etc, within 1km. of the road fine cutting and filling compost pit..	m^2	unskl	m-day	1.20	-	-	-	Doko	- -	3% of labour cost	
	c Turning compost once per month.	m^2	unskl	m-day	0.10	-	-	-	Shovel	-	3% of labour cost	
	(7) Direct seeding on site											
	a. Broadcasting grass seeds in slopes<40°, seeding rate 25g. per m^2	100 m^2	unskl	m-day	0.17	Seed	Kg.	2.50	-	-		
	b. Broadcasting grass seeds on slopes<40 °,including cover with long mulch, seeding rate 25g. per m^2	100 m^2	unskl	m-day	5.00	Seed Mulch	kg. m^3	2.50 5.00	-	-		
	c. Broadcasting grass seeds on slopes<40° -50° including cover with long mulch and jute netting of mesh size 300mmX 500mm. Seeding @ 25g. per m2. Operation includiesd pegging with suitable live pegs of hardwood cuttings (eg. simal)@ 1m. spacing, jute net of 6.75m X1m size	100 m^2	unskl	m-day	6.25	seed Mulch Jute net Live pegs	kg. m^3 m^2 Nr.	2.50 5.00 105.0 128.0	khukuri Mallet (wooden hammer	-	3% of labour cost	
	d. Sowing shrub or tree seeds on all slopes, at 25cm. intervals, including digging planting holes to 5cm. depth and covering with silt. Two seeds per planting hole.	100 m^2	unskl	m-day	1.00	Seeds	Nr.	3200	MS rod of 50cm length	-	3% of labour cost	

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
27.	8. Planting grass cuttings on site.											
	a. Planting single node culm cuttings of grass (eg. napier) on fill slopes<45º and embankment slopes in plain areas. Approx length 15-20cm, including digging planting hole 10-20cm. depth using a metal rod or hardwood peg.	100 Nr.	unskl	m-day	0.20	grass cuttings Hessian jute	Nos m²	100.0 0.27	Ms rod or hardwood peg of 50 cm length		3% of labour cost	
	b. Planting single node culm cuttings of grass (eg. napier) on hard cut slopes<45º Approx length 15-20cm, including digging planting hole 10-20cm. depth using a metal rod or hardwood peg.	100 Nr	unskl	m-day	0.35	grass cuttings Hessian jute	Nos m²	100.0 0.27	Ms rod or hardwood peg of 50 cm length		3% of labour cost	
	c. Planting single node culm cuttings of grass (eg. napier) on hard cut slopes<45º. Approx length 15-20cm. including digging planting hole 10-20cm. depth using a metal rod or hardwood peg.	100 Nr	unskl	m-day	0.50	grass cuttings Hessian jute	Nr. m²	100.0 0.27	Ms rod or hardwood peg of 50 cm length		3% of labour cost	
	d. Planting rooted grass slips on embankment slopes in plain areas, at 10cm. spacings within the row. The first row is 0.75m from the edge of the pavement and subsequent rows are spaced at 1m intervals down the embankment.	m	unskl	m-day	0.02	grass slips Hessian jute Line string	Nr. of drills m² m.	11.00 0.14 0.27	Ms rod or hardwood peg of 50 cm length		3% of labour cost	
	e. Planting rooted grass slips on slopes <45º including preparation of slips on site. Operation includes digging planting hole to a max of 5cm. depth with metal rod or hardwood peg depending on nature of soil. The planting drills should be spaced 10cm. apart.	m2	unskl	m-day	0.20	grass slips Hessian jute	Nr. of drills m²	100.0 0.27	Ms rod or hardwood peg of 50 cm length Khukuri		3% of labour cost	
	f. Planting rooted grass slips on slopes <45º including preparation of slips on site. Operation includes digging planting hole to a max of 5cm. depth with metal rod or hardwood peg, depending on nature of soil. The planting drills should be spaced 10cm. apart.	m2	unskl	m-day	0.30	grass slips Hessian jute	Nr. of drills m²	100.0 0.27	Ms rod or hardwood peg of 50 cm length khukuri		3% of labour cost	

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
27.	(8)g. Planting rooted grass slips on slopes>60° including preparation of slips on site. Operation includes digging planting hole to a max of 5 cm depth with metal rod or hardwood peg, depending on nature of soil. The planting drills should be spaced 10 cm apart	m^2	unskl	m-day	0.40	grass slips Hessian jute	Nr of drills m^2	100.0 0.27	MS rod of hardwood peg of 50 cm length Khukuri	- -	3% of labour cost	
	9. Planting shrub and tee seedling and cuttings on site											
	a. Planting containersied tree and shrub seedlings, including pitting, transplanting, composting & placing tree guards, on toe of embankment slopes in plain areas, not less than 8 m. form the road centre lone. Pit size 30cm diameter X 30cm. depth. Compost volume 1/4 of the volume of the pit, mixed with orginal soil.	10 Nr.	unskl	m-day	0.25	container seedling Compost Tree guard Green Mulch	Nr m^3 Nr m^3	10.00 0.05 10.00 0.04	Khanti Mallet (wooden hammer) Doko	- - -	3% of labour cost	
	b. Planting containersied tree and shrub seedlings, including pitting, transplanting, composting and mulching on slopes <30°. pit size 30cm diameter X 30cm depth. Mix compost with soil and backfill into pit, to 1/4 of pit volume.	10 Nr.	unskl	m-day	0.33	seedling Compost Green Mulch	Nr m^3 m^3	10.00 0.05 0.04	Khanti Doko	- -	3% of labour cost	
	c. Planting containersied tree and shrub seedlings, including pitting, transplanting, composting and mulching on slopes 30 -45° pit size 30cm diameter X 30cm depth. Mix compost with soil and backfill into pit, to 1/4 of pit volume.	10 Nr.	unskl	m-day	0.40	seedling Compost Green Mulch	Nr m^3 m^3	10.00 0.05 0.04	Khanti Doko	- -	3% of labour cost	
	d. Planting containersied tree and shrub seedlings, including pitting, transplanting, composting and mulching on slopes <30°. pit size 10cm diameter X 20cm depth. compost volume 1/4 of volume of the pit mixed with original soil.	10 Nr.	unskl	m-day	0.17	seedling Compost Green Mulch	Nr m^3 m^3	10.00 0.03 0.04	Khanti	-	3% of labour cost	

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
27.	(9) e. Planting rooted tree stump cuttings and bare root seedlings, including pitting, transplanting, composting and mulching on slopes 30-45^0. pit size 10cm diameter X 20cm depth. compost volume ¼ of volume of the pit mixed with original soil.	10 Nr.	unskl	m-day	0.25	seedling Compost Green Mulch	Nr m^3 m^3	10.00 0.03 0.04	Khanti	-	3% of labour cost	
	f. Planting tree stump and bare root seedlings, including pitting, transplanting, composting and mulching on slopes >45^0. pit size 10cm diameter X 20cm depth. compost volume ¼ of volume of the pit mixed with original soil.	10 Nr	unskl	m-day	0.33	seedling Compost Green Mulch	Nr m^3 m^3	10.00 0.03 0.04	Khanti	-	3% of labour cost	
	10. Vegation palisade construction brush layering and fascines.											
	a. Collection of hardwood cutting for planting metaral (eg. assuro namdi ,phul ,simali) from sources with in 1km of road . Material to be approx 1m. in leanth and minimum 5cmin diameter .	1000 Nr.	unskl	m-day	0.85	adeuqate supply of bushes	-	-	Khukuri	-	3% of labour cost	
	b. Prepation and planting of live page of selected species (eg assuro namdi phul simil) of mimum 1m length to 0.5 m depthin to hard ground pegs speced at 5cm centres with in rows with 5-20 cm between rows ,and and interwoven with vegetation .	m	unskl	m-day	0.17	Live pegs	Nr.	20.00	Crow bar	-	3% of labour cost	
	c. Preparation and planting of live cutting of selected species (eg. assuro nsmdi ,phul , simali) of minimum 1 m length to 0.5m in to soft debries page spaced at 5cm centres with in rows wth 5-20cm between rows and interwoven with vegetation.	m	unskl	m-day	0.12	Live pegs	Nr.	20.00	Crow bar	-	3% of labour cost	
	d. Site preparation for fascine laying earth works in excavation of trench to 20cm depth.	m	unskl	m-day	0.06	-	-	-	Pick axe Shovel	- -	3% of labour cost	

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
27.	(10) e. Laying of live fascines, using live hard wood cutting of selected species(eg. assuro, namdi, phul, simli) of minimum m length to 0.5m length placed in bundles to give 4 running metres of cutting p0er metre o ffascine including backfilling of trenth and careful compaction.	m	unskl	m-day	0.17	Hardwood cuttings of at least 1m in length.	m	8.00	Khukuri Shovel	- -	3% of labour cost	
	11. Jute netting works											
	a. Standard jute neetting for bare slopes and under planting with slips spinning raw jete from 100% jute fibre in to yarn in to neeting hand spun yarn 5to 8mm in diametar width of net 1.20 metres wrap stands 27 nos per 100 cm weft strands 20-24 nos per100cm mesh size 30-40 mm squre and 1.25 kg/m weight at 1.20m wides (note a tosrois the weaving shuttle normally made from a split large bamboo culm)	m^2	unskl	m-day	0.36	Raw jute	kg.	1.25	Khukuri Bamboo sticks(10Nr) Weaving frame Tosro	- - - -	3% of labour cost	
	b. Wide mish jute netting for holding mulch in slopes. spinning raw from 100% jute fibre into yarn and weaving the yarn into netting. Hand spun yarn 3 to 5mm in diameter, 1.20 metres side and 11.2m long mesh size 150X500mm rectangular mesh and 0.25kg/m at 1.20m width. [note. A tosro is the weaving shuttle, normally made from a split large bamboo culm.	m^2	unskl	m-day	0.15	Raw jute	kg.	0.26	Khukuri Bamboo sticks(10Nr) Weaving frame Tosro	- - - -	3% of labour cost	
	c. Placing 30-40mm square mesh jute netting on bare slopes (for later underplanting with grass slips), including pegging with live hardwood cutting or split bamboo pegs and loosenning tension so that the net huge the slope throughout.	m^2	unskl	m-day	0.15	Woven jute net Hardwood cuttings or split bamboo pegs	m^2 Nr.	1.00 5.00	Ms rod of 50 cm length Mallet (wooden hammer		3% of labour cost	
	d. Placing 150X500 mm mesh jute netting lo hold mulch on slopes, including application of mulch & pegging with live hardwood cuttings or split bamboo pegs and lossening tension so that the net hugs the slope throught.	m^2	unskl	m-day	0.10	Cut mulch woven jute net Hardwood cuttings or split bamboo pegs	m^3 m^2 Nr.	0.05 1.00 5.00	Ms rod of 50 cm length Mallet (wooden hammer		3% of labour cost	

S. N	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
27.	12. Fabrication of gabion bolster cylinders.											
	a. Site preparation for 30 cm diameter bolster: earth works in excavation of trench	m	unskl	m-day	0.085				Pick axe Shovel	-	3% of labour cost	
	b. Site preparation for 60 cm diameter bolster: earth works in exavation of trench.	m	unskl	m-day	0.36				Pick axe Shovel		3% of labour cost	
	c. Manufacture of bolster panels 70X100 mm hexagonal mesh wire construction (10 SWG frame and 12 SWG mesh)	m	unskl	m-day	0.10	GI wire	Kg.	2.00	Gabion frame & tools	-	3% of labour cost	
	d. Construction of 30 cm bolster cylinder: pacing, strectching wire mesh, filling with boulders, closing and back filling .	m	unskl	m-day	0.375	Boulders	m^3	0.09	Gabion tools Doko	- - -	3% of labour cost	
	e. Construction of 60 cm bolster cylinder: placing, strectching wire mesh, filling with boulders closing and backfilling .	m	unskl	m-day	0.75	Boulsers	m^3	0.36	Gabion tools Doko		3% of labour cost	
	f. Fonstruction of 30 cm bolster cyliner: placing, strectching wire mesh over 20 gauge black polythene sheeting, filling with boulders, closing and backfilling	m	unskl	m-day	0.375	Black ploythene Boudlers	m^2 m^3	0.40 0.09	Gabion tools Doko	- -	3% of labour cost	
	g. Construction of 60 cm bolster cylinder: pacing, strectching wire mesh over 20 gauge black polythene sheeting, filling with boulders, closing and backfilling	m	unskl	m-day	0.75	Black ploythene Boulders	m^2 m^3	0.80 0.36	Gabion tolls Doko	- -	3% of labour cost	
	h. Anchoring bolster: 12mm diameter MS re-bar cut into 2m lengths for anchorage and placed at 1 m intervals.		unskl	m-day	0.05	MS rod	m	2.00	Sledge hamme		3% of labour cost	
	i. Laying of terram paper (geotextile)	m2	unskl	m-day	0.05	Terram paper	m^2	1.15	Khukuri		3% of labour cost	
	13. Bamboo tree guards											
	a. Weaving bamboo tree guards using bamboo poles as uprights : 1.60m in heights; and weaving split bamboo with the outer wall intact around the posts Dimensiouns of the guard are 0.60m diameter X1.30m height.	Nos	unskl	m-day	0.25	Bamboo	Nr.	2.20	Khukuri		3% of labour cost	

28. Tubewell Drilling in Unconsolidated Formations

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
28.	1. Site preparation for drilling woks.											
	a. Rig setting up and Preparation of mud pit .	1 well	Driller Ast. helper Driller helper camp helper watch man	m-day m-day m-day m-day m-day	1.0 1.0 8.0 1.0 1.0							
	b. Camp setting and preparation incl. site clearriace.	1 well	Art. helper Driller helper camp helper watch man	m-day m-day m-day m-day	1.0 8.0 1.0 1.0							
	c.Assembling entralising and sinking of guide pipe (conductor of pipe) of size 22" dia to a depth of 10m.	10 m.	same rate as of 2.1 (9m/hr)									
	2. Drilling in soft formation (pilot hole)											
	2.1 Drilling of pilot hole by std. bit ranging from 7 5/8" to 9 7/8" dia. For the first initial depth of 100m. With direct rotary machine in soft formati on, (consists of clay, silt and sand below partical size of 4.75 mm) penetration rate is fixed at 3m. per hr. Note: In all works, drilling rig is inclusive of mud pump also. Whether it be a part or a separate unit of the drilling rig.	100 m	Hy Geo Ast. Hy. Geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light driver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day m-day	5.0 5.0 10 10 80 20 10 20 10 10	Bentonite Barite (CMC) Drill bit Oxygen gas Acetelyne gas Bucket Line piston rod Gland packing swivel packing v- packing Valve/steel ball valve seat valve packing	ton ton Nr. Cyl. Cyl. Nr. Nr. Nr. set set set Nr. Nr. Nr.	1.5 0.25 0.33 0.2 0.1 2.0 0.5 0.5 2.0 1.0 10 1.0 1.0 4.0	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hrs. hrs. hrs. hrs. hrs.	33.33 25 10 5 20 20	working time of all man power and machinery incl idle hrs as well as sample collection, washing and rod changing with minor break down time
	2.2 Drilling for depth over and beyond 100m, for every additional 100m. depth, add to quantities of item. Note: In calculating rates for drilling to depths beyond 100m. first get rate per m form 2.1 and then rate per m for every additional 100 m. form 2.2. then add two to get req rate (see eg. in remarks	100 m	Hy Geo Ast. Hy. Geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light driver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day m-day	0.2 0.2 0.4 0.4 2.4 0.8 0.4 0.8 0.4 0.4	Bentonite Barite (CMC) Dill bit Oxygen gas Acetelyne gas Bucket Liner Piston rod Gland packing Swivel packing V- paving Valve/steel ball valve seat Valve packing	ton ton Nr. cyl cyl. Nr. Nr. Nr. set set set Nr. Nr. Nr	0.06 0.01 - - - 0.16 0.04 0.04 0.16 0.08 0.08 0.08 0.08 0.32	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hrs. hrs. hrs. hrs. hrs	2 2.4 0.8 0.4 1.6 1.2	For example Driller and for first 100 m will be 10 to give 10/100 md per m depth, form 100m to 200m. it well be 10/100+ 0.4/100 form 200 m. to 300m. it will be 10/100+ 0.8.100md and so on.
	2.3 Add 15% of all costs form 2.1 and 2.2 for periodic, small tools, small tools, small spare parts, unfroseen items that may be required including machinery servicing etc.											

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
28.	3. Drilling in medium formation (Pilot Hole)											
	3.1 Drilling of pilot by std. bit ranging form 7.5/8" dia.For the first initial depth of 100 m. with drilling rig machine in medium formation (consists of gravel fine ot medium) penetration rate is fixed at 2m. hour.	100 m.	Hy geo	m-day	7.5	Bentonite	ton	1.75	Rig			working time of all man power and machinery incl.idle hrs as well as sample collection, washing and rod changing with minor break down time
			Ast. Hy. geo	m-day	7.5	Barite (CMC)	ton	0.37	machine	hrs	50	
			driller	m-day	15	Drill bit	Nr.	0.5	Elec			
			Ast. driller	m-day	15	Oxygen gas	cyl	0.2	Generator	hrs	37.5	
			Driller helper	m-day	90	Acetelyne gas	cyl.	0.1	Water truck	hrs	15	
			camp helper	m-day	30	Bucket	Nr.	3.5	cargo truck	hrs	7.5	
			Welder	m-day	15	Liner	Nr.	0.75	pick up truck	hrs	30	
			Heavy driver	m-day	30	piston rod	Nr.	0.75	water pump	hrs	30	
			Light dirver	m-day	15	Gland packing	set	3				
			watch man	m-day	15	swivel packing	set	1.5				
						v- packing	set	1.5				
						Valve/steel ball	Nr.	2				
						valve seat	Nr	2				
						value packing	Nr.	6				
	3.2 Drilling to depth over and beyond 100m. for every additional 100m. depth add to qtty of tiem 3.1	100 m.	Hy Geo	m-day	0.3	Bentonite	ton	0.07	Rig			
			Ast. Hy. Geo	m-day	0.3	Barite (CMC)	ton	0.015	machine	hrs.	3	
			driller	m-day	0.6	Dill bit	Nr.	-	Elec			
			Ast. driller	m-day	0.6	Oxygen gas	cyl	-	Generator	hrs.	3.6	
			Driller helper	m-day	3.6	Acetelyne gas	cyl.	-	Water truck	hrs.	1.2	
			camp helper	m-day	1.2	Bucket	Nr.	0.24	cargo truck	hrs	0.6	
			Welder	m-day	0.6	Liner	Nr.	0.06	pick up truck	hrs	2.4	
			Heavy driver	m-day	1.2	Piston rod	Nr.	0.06	water pump	hrs	1.8	
			Light dirver	m-day	0.6	Gland packing	set	0.24				
			watch man	m-day	0.6	Swivel packing	set	0.12				
						V- paving	set	0.12				
						Valve/seel ball	Nr.	0.12				
						valve seat	Nr.	0.12				
						Valve packing	Nr.	0.48				
	3.3 Add 15% of all costs form 3.1 and 3.2 for periodic repairs of machinary, small tools, small spare parts, unforseen items that may be mechinary servicing etc.											
	4. Drilling in hard formation (Pilot hole)	100 m.	Hy Geo	m-day	10	Bentonite	ton	3	Rig			working time of all man power and machinery incl.idle hrs as well as sample collection, washing and rod changing with minor break down time
	4.1 Drilling of pilot hole by std. bit ranging from 7 5/8" dia for the first initial depth of 100m with drilling rig machine in hard formation (consists of partical size including and above coarse gravel penetration rate is fixed at 1.5m per hour.		Ast. Hy. Geo	m-day	10	Barite (CMC)	ton	0.5	machine	hrs.	66.66	
			driller	m-day	20	Dill bit	Nr.	1	Elec			
			Ast. driller	m-day	20	Oxygen gas	cyl	0.2	Generator	hrs	50	
			Driller helper	m-day	120	Acetelyne gas	cyl.	0.1	Water truck	hrs.	20	
			camp helper	m-day	40	Bucket	Nr.	5	cargo truck	hrs.	10	
			Welder	m-day	20	Liner	Nr.	1.25	pick up truck	hrs	40	
			Heavy driver	m-day	40	Piston rod	Nr.	1.25	water pump	hrs	40	
			Light dirver	m-day	20	Gland packing	set	5				
			watch man	m-day	20	Swivel packing	set	2.5				
						V- paving	set	2.5				
						Valve/seel ball	Nr.	2.5				
						valve seat	Nr.	2.5				
						Valve packing	Nr.	10				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
28.	4.2 Drilling to depths over and beyond 100m, for every additional 100m depth, add to quantities of item 4.1	100 m.	Hy geo Ast. Hy. geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day m-day	0.4 0.4 0.8 0.8 0.8 1.6 0.8 1.6 0.8 0.8	Bentonite Barite (CMC) Dill bit Oxygen gas Acetelyne gas Bucket Liner Piston rod Gland packing Swivel packing V- paving Valve/seel ball valve seat Valve packing	ton ton Nr. cyl cyl. Nr. Nr. Nr. set set set Nr. Nr Nr.	0.12 0.02 - - - 0.32 0.08 0.08 0.32 0.16 0.16 0.16 0.16 0.64	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hr hr hr hr hr	4 4.8 1.6 0.8 3.2 2.4	working time of all man power and machinery incl.idle hrs as wel as sample collection, washing and rod changing with minor break down time
	4.3 Add 15% of cost from 4.1 and 4.2 for periodic repairs of machinary, small tools, small parts, unforseen items that may be required including machinary servicing etc.											
	5. Drilling in soft formation (First reaming of pilot hole)											
	5.1 Reaming of pilot hole by std. bit above 9. 7/8" and below 13 3/4" dia. For the first initial depth of 100m with drilling rig machine in soft formation (consists of clay, silt and sand below partical size of 4.75mm.) penetration rate is fixed at 9m per hr.	100 m.	Hy geo Ast. Hy. geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day m-day	2.5 2.5 5 5 30 10 5 10 5 5	Bentonite Barite (CMC) Dill bit Oxygen gas Acetelyne gas Bucket Liner Piston rod Gland packing Swivel packing V- paving Valve/seel ball valve seat Valve packing	ton ton Nr. cyl cyl. Nr. Nr. Nr. set set set Nr. Nr Nr.	1 0.25 0.2 0.1 0.05 1 0.25 0.25 1 0.5 0.5 0.5 0.5 2	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hr hr hr hr hr	11.11 15 10 2.5 10 20	working time of all man power and machinery incl idle hrs as well as sample collection, washing and rod changing with minor break down time
	Note: In all works, drilling rig machine is inclusive of mud pump also, whether it be a part or a separate unit of the drilling rig.											

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Uni	Qty.	
28.	5.2 Reaming of pilot hole by std. bit above 9 7/8" & below 13 3/4" dia for drilling to depths over & beyond 100m.for every additional 100m depth, add to quantities of item 5.1	100 m.	Hy Geo	m-day	0.1	Bectonite	ton	0.04	Rig			For eg. bucket req for first 100m will be 1 to give 1/100 no. per m depth of reaming from 100m to 200 it will be 1/100+0.16/ 100No,from 200m to 300 it will be 1/100 + 0.32 /100 No. And so on
			Ast. Hy, Geo	m-day	0.1	Barite (CMC)	ton	0.01	machine	hr	1	
			driller	m-day	0.2	Drill bit	Nr.	-	Elec.		1.2	
			Ast. driller	m-day	0.2	Oxygen gas	cyl	-	Generator	hr	1	
			Driller helper	m-day	1.2	Acetelyne gas	cyl.	-	Water truck	hr	0.2	
			camp helper	m-day	0.4	Bucket	Nr.	0.16	cargo truck	hr	0.8	
			Welder	m-day	0.2	Line	Nr.	0.02	pick up truck	hr	1.5	
			Heavy driver	m-day	0.4	piston rod	Nr.	0.02	water pump	hr		
			Light dirver	m-day	0.2	Gland packing	set	0.16				
			watch man	m-day	0.2	swivel packing	set	0.08				
	Note: In calculating rates for reaming to depths beyond 100m. first get rate per m. from 5.1 and then add the two to get required rate. (see eg. in remark)					v- packing	set	0.08				
						Valve/steel ball	Nr.	0.04				
						valve seat	Nr	0.04				
						value packing	Nr.	0.32				
	6.3 Add 8% of all costs form 5.1 & 5.2 for periodic repairs of machinary, small tools, small spare parts unforseen items that may be required including machinary servicing etc.											
	6. Drilling in medium formation (first reaming of pilot hole)											
	6.1 raming of pilot hole by std bit above9 7/8" & below 13 3/4" dia for the first initial depth of 100m with drilling rig machine in mekium formation (consists of gravel fine to medium) penetration rate is fixed at 6m per hour.	100 m.	Hy Geo	m-day	3.75	Bentonite	ton	1	Rig			
			Ast. Hy, Geo	m-day	3.75	Barite (CMC)	ton	0.25	machine	hr	16.67	
			driller	m-day	7.5	Dill bit	Nr.	0.25	Elec.			
			Ast. driller	m-day	7.5	Oxygen gas	cyl	0.1	Generator	hr	22.5	
			Driller helper	m-day	45	Acetelyne gas	cyl.	0.05	Water truck	hr	15	
			camp helper	m-day	15	Bucket	Nr.	0.75	cargo truck	hr	3.75	
			Welder	m-day	7.5	Liner	Nr.	0.4	pick up truck	hr	15	
			Heavy driver	m-day	15	Piston rod	Nr.	0.4	water pump	hr	30	
			Light dirver	m-day	7.5	Gland packing	set	1.5				
			watch man	m-day	7.5	Swivel packing	set	0.75				
						V- paving	set	0.75				
						Valve/steel ball	Nr.	1				
						valve seal	Nr.	1				
						Valve packing	Nr.	3				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
26.	6.2 Reaming of pilot hole by std. bit above 97/8" & below 13 3/4" dia for drilling to depths over & beyond 100m.for every additional 100m depth, add to quantities of item 6.1 (Refer to Item 5.2)	100 m.	Hy Geo Ast. Hy. Geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day m-day	0.15 0.15 0.3 0.3 1.8 0.6 0.3 0.6 0.3 0.3	Bentonite Barite (CMC) Drill bit Oxygen gas Acetelyne gas Bucket Line piston rod Gland packing swivel packing v- packing Valve/steel ball valve seat value packing	ton ton Nr. cyl cyl. Nr. Nr. Nr. set set set Nr. Nr Nr.	0.04 0.01 - - - 0.16 0.024 0.024 0.24 0.12 0.12 0.06 0.06 0.32	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hrs. hrs. hrs. hrs. hrs hrs	1.5 1.8 1.5 0.3 1.2 2.25	
	6.3 Add 8% of all costs form 6.1 & 6.2 for periodic repairs of machinary, small parts, unforseen items that may be required including machinary servicing etc.											
	7. Drilling in hard formation (first reaming of pilot hole)											
	7.1 Reaming of pilot hole by std bit above97/8" & below 13 3/4 dia. for the first initial depth of 100m with drilling machine in hard formation (consists of particle size incl. & above coarse gravel.) penetration rate is fixed at 4.5m per hour.	100 m.	Hy Geo Ast. Hy. Geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day m-day	5 5 10 10 60 20 10 20 10 10	Bentonite Barite (CMC) Drill bit Oxygen gas Acetelyne gas Bucket Line piston rod Gland packing swivel packing v- packing Valve/steel ball valve seat value packing	ton ton Nr. cyl cyl. Nr. Nr. Nr. set set set Nr. Nr. Nr.	1.25 0.25 0.33 0.1 0.05 2.5 0.7 0.7 2.5 1.5 1.5 1.5 1.5 5	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hrs. hrs. hrs. hrs. hrs hrs	22.22 30 20 5 20 40	
	7.2 Reaming of pilot by std bit above 9.7/8" and 13 3/4" dia for drilling to depths over & beyond 100m depth, & to quantities of item 7.1 (Refer to Item 5.2)	100 m.	Hy Geo Ast. Hy. Geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day m-day	0.2 0.2 0.4 0.4 2.4 0.8 0.4 0.8 0.4 0.4	Bentonite Barite (CMC) Drill bit Oxygen gas Acetelyne gas Bucket Line piston rod Gland packing swivel packing v- packing Valve/steel ball valve seat value packing	ton ton Nr. cyl cyl. Nr. Nr. Nr. set set set Nr. Nr. Nr.	0.05 0.01 - - - 0.24 0.032 0.032 0.24 0.12 0.12 0.04 0.04 0.32	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hrs. hrs. hrs. hrs. hrs hrs	2 2.4 2 0.4 1.6 3	

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
28.	7.3 Add 8% of all costs from 7.1 & 7.2 for periodic repairs of machinary, small tools, small spare parts unforseen items that may be required incl. machinary servicing etc.											
	8. Drilling in sort formation (second reaming of bore hole)	100 m	Hy Geo	m-day	2.5	Bentonite	ton	1	Rig	hrs.	11.1	Working time of all manpower and machinary includes idle hours as well as sample collection, washing & rod changing with minor breakdown time
			Ast. Hy. Geo	m-day	2.5	Barite (CMC)	ton	0.25	machine		1	
	8.1 Second reaming of bore hole by std. bit of 17 1/2" dia upto depth of 100 m with drilling rig machine in soft formation consists of clay, silt and sand below partical size of 4.75 mm penetration rate is fixed at 9m per hr.		driller	m-day	5	Drill bit	Nr.	0.125	Elec.	hrs.	15	
			Ast. driller	m-day	5	Oxygen gas	cyl	0.1	Generator	hrs.	10	
			Driller helper	m-day	30	Acetelyne gas	cyl.	0.05	Water truck	hrs.	2.5	
			camp helper	m-day	10	Bucket	Nr.	1	cargo truck	hrs	10	
			Welder	m-day	5	Line	Nr.	0.25	pick up truck	hrs	20	
			Heavy driver	m-day	10	piston rod	Nr.	0.25	water pump			
			Light dirver	m-day	5	Gland packing	set	1				
			watch man	m-day	5	swivel packing	set	0.5				
						v- packing	set	0.5				
						Valve/steel ball	Nr.	0.5				
						valve seat	Nr	0.5				
						value packing	Nr.	2				
	Note: In all works, drilling rig machine is inclusive of mud pump also, weathe nit be a part or a separate unit of the drilling rig.											
	Note: Same conts of 8.1 applies to third reaming by 22" dia std bit for depths of upto 100m if third reaming is required.											
	8.2 Add 8% of all conts form 8.1 for periodic repairs of machinary small tools, small spare parts, unforseen items that may be required including machinary servicing etc.											
	9. Drilling in medium formation (Second reaming of bore hole)	100 m	Hy Geo	m-day	3.75	Bentonite	ton	1	Rig			
			Ast. Hy. Geo	m-day	3.75	Barite (CMC)	ton	0.25	machine	hrs.	16.67	
	9.1 Second reaming of bore hole by std bit of 17 1/2" dia upto depth of 100m with drilling rig machine in medium formation (consists of gravel fine to medium) Penetration rate is fixed at 6 m per hr.		driller	m-day	7.5	Drill bit	Nr.	0.167	Elec.			
			Ast. driller	m-day	7.5	Oxygen gas	cyl	0.1	Genecator	hrs.	22.5	
			Driller helper	m-day	45	Acetelyne gas	cyl.	0.05	Water truck	hrs	15	
			camp helper	m-day	15	Bucket	Nr.	1.75	cargo truck	hrs.	3.75	
			Welder	m-day	7.5	Line	Nr.	0.4	pick up truck	hrs	15	
			Heavy driver	m-day	15	piston rod	Nr.	0.4	water pump	hrs	30	
			Light dirver	m-day	7.5	Gland packing	set	1.5				
			watch man	m-day	7.5	swivel packing	set	0.75				
						v- packing	set	0.75				
						Valve/steel ball	Nr.	1				
						valve seat	Nr.	1				
						value packing	Nr.	3				

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
28.	Note : Same costs of 9.1 applies to third reaming by 22" dia std bit for depths of upto 100m if third reaming is required.											
	9.2 Add 8% of costs form 9.1 for periodic repairs of machinary, small tools, small parts, unforseen items that may be required including machinary servicing etc.											
	10. Drilling in hard formation (Second reaming of bore hole)											
	10.1 Second reaming of bore hoel by std bit of 17 1/2" dia upto depth of 100m with drilling rig machine in medium formation (consists of gravel fine to medium Penetration rate is fixed at 4.5 m per hr.	100 m.	Hy Geo	m-day	5	Bentonite	ton	1.25	Rig			
			Ast. Hy. Geo	m-day	5	Barite (CMC)	ton	0.25	machine	hrs.	22.22	
			driller	m-day	10	Drill bit	Nr.	0.25	Elec.			
			Ast. driller	m-day	10	Oxygen gas	cyl	0.1	Generator	hrs.	30	
			Driller helper	m-day	60	Acetelyne gas	cyl.	0.05	Water truck	hrs.	20	
			camp helper	m-day	20	Bucket	Nr.	2.5	cargo truck	hrs.	5	
			Welder	m-day	10	Line	Nr.	0.7	pick up truck	hrs	20	
			Heavy driver	m-day	20	piston rod	Nr.	0.7	water pump	hrs	40	
			Light dirver	m-day	10	Gland packing	set	2.5				
			watch man	m-day	10	swivel packing	set	1.5				
						v- packing	set	1.5				
						Valve/steel ball	Nr.	1.5				
						valve seat	Nr	1.5				
						value packing	Nr.	5				
	Note: Same costs of 9.1 applies to third reaming by 22" dia std bit for depths of upto 100m if third reaming is required.											
	10.2 Add 8% of costs form 10.1 for periodic repairs of machinary, small tools, small parts, unforseen items that may be required including machinary servicing etc.											
	11. Reconditioning of bore hole.											
	11.1 Reconditioning of bore hole before lowering of pipe assembly of 4" dia to depth upto 100m.	400 m.	driller	m-day	0.8	Bentonite	ton	0.1	Rig			There is no change rate for reconditioning of bore hole regarding depth beyond 100m.
			Ast. driller	m-day	0.8	Bit	Nr.	0.01	machine	hrs.	3	
			Driller helper	m-day	2.4	Barite	ton	0.15	Elec.			
			camp helper	m-day	1.6	(CMC)			Generator	hrs.	1	
			Welder	m-day	0.8				Water truck	hrs.	2	
			Heavy driver	m-day	0.8				cargo truck	hrs.	1	
			Light dirver	m-day	0.8				pick up truck	hrs	4	
			watch man	m-day	0.8				water pump	hrs	-	

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
28.	11.2 Lowering of pipe assembly.											
	a. 4" dia to a depth of 100m	400 m.	Hy Geo driller Ast. driller Driller helper	m-day m-day m-day m-day	1 1 1 6	4" blind piep 4" slotted pipe 4" flange 2" nipple	m m Nr Nr	reqd reqd 2 1	Rig machine Elec. Generator	hrs. hrs.	8 3	There is no change rate for reconditioning of bore hole regarding depth beyond 100m.
	b. Add 5% of costs form 11.1 and 11.2 (a) for periodic repairs of machinary, small tools, small spare parts, unforseen items that may be required etc.		camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day	2 1 1 1 1	4" gasket Welding rod Oxygen gas Acetelyne gas Pea gravel	set Pakt cyl cyl cu.m	1 6 1 0.5 reqd	Water truck cargo truck pick up truck water pump	hrs. hrs. hrs hrs	8 4 6 12	
	c. Lowering of pipe assembly of 6/10F dia for depth of 100 m.	400 m.	Hy Geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day	1.5 1.5 1.5 9 3 2 1.5 1.5 1.5	10" blind pipe 6" blind pipe 6" slotted pipe 6/10" reduction 10" flange 2" nipple 10" gaspet Welding rod Oxygen gas Acetelyne gas Pea gravel	m m Nr Nr Nr set pkt cyl cyl cu. m	reqd reqd reqd 1 2 1 1 9 1.5 0.75 reqd	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hrs. hrs. hrs. hrs. hrs hrs	12 6 12 4 8 16	There is no change rate for reconditioning of bore hole regarding depth beyond 100m.
	d. Add 5% of costs form 11.3 & 11.2 © for periodic repairs of machinary, small tools, small spare parts unforseen items that may be required etc.											
	11.3 Reconditioning of bore hole before lowering of pipe assembly of 6/10" dia to a depth of 100m.	400 m	driller Ast. driller Driller helper camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day m-day m-day m-day	1.5 1.5 9 3 1.5 1.5 1.5 1.5	Bentonite Bit Barite (CMC)	ton Nr ton	0.5 0.05 0.25	Rig machine Elec. Generator Water truck cargo truck pick up truck water pump	hrs. hrs. hrs. hrs. hrs hrs	6 2 2 4 8	There is no change rate for reconditioning of bore hole regarding depth beyond 100m.
	12. Well development works.											
	12.1 Well development by drilling Rig machine for well size of 4" (Back washing & hnner washing)		Hy.Geo driller Ast. driller Driller helper camp helper Welder Heavy driver Light dirver watch man	m-day m-day m-day m-day m-day m-day m-day m-day m-day	0.75 0.75 0.75 4.5 1.5 0.75 0.75 0.75 0.75	Bucket Inner Piston rod Gland packing Swivel packing V-packing Valve/steel ball valve seat Valve packing rod, hex. me. welding rod.	Nr Nr Nr set set Nr Nr Nr kg pkt	1 0.25 0.25 2 2 2 0.25 0.25 2 50 0.5	Rig machine Water truck pick up truck water pump welding generator	hrs. hrs. hrs. hrs. hrs	6 8 4 16 1	

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty.	Type	Unit	Qty.	
28.	12.2 Well development by drilling Rig machine for well size of 4" (water jetting)	400 m.	driller	m-day	0.75	Bucket	Nr	1	Rig			
			Ast. driller	m-day	0.75	liner	Nr	0.25	machine	hrs.	6	
			Driller helper	m-day	4.5	Piston rod	Nr	0.25	Water truck		8	
			welder	m-day	0.75	Gland packing	set	2	pick up truck	hrs.	4	
			Heavy driver	m-day	0.75	Swivel packing	set	2	water pump	hrs.	16	
			Light dirver	m-day	0.75	V-packing	set	2	welding			
			watch man	m-day	0.75	Valvesteel ball	Nr	0.25	generator	hrs	1	
						valve seat	Nr	0.25				
						Valve packing	Nr	2				
						welding rod	pkt	0.5				
	12.3 Well development by compressor machine for well size of 4"	400 m.	Hy Geo	m-day	5				Rig	hrs.	4	
			driller	m-day	7				machine	hrs.	40	
			Driller helper	m-day	14				Compressor	hrs.	30	
			camp helper	m-day	14				generator			
			Light dirver	m-day	7							
			watch man	m-day	7							
	12.4 Well development by drilling Rig machine for well size of 6/10" (Back washing and inner washing)	400 m.	Hy Geo	m-day	1	Bucket	Nr	1	Rig	hrs.	8	There is no change in rate regarding depth beyond 100m.
			Driller	m-day	1	Inner	Nr	0.25	machine			
			Ast. driller	m-day	1	Piston rod	Nr	0.25	Water truck	hrs.	11	
			Driller helper	m-day	6	Gland packing	set	2	pick up truck	hrs.	4	
			camp helper	m-day	2	Suel packing	set	2	water pump	hrs.	22	
			Welder	m-day	1	V-packing	set	2	welding			
			Heavy driver	m-day	1	Valve	Nr	0.25	generator	hrs	1	
			Light dirver	m-day	1	valve seat	Nr	0.25				
			watch man	m-day	1	Valve packing	Nr	2				
						rod..hex. me.	kg	75				
						welding rod	pkt	0.75				
	12.5 Well development by drilling Rig machine for well size of 6/10" (water jetting)	400 m.	Driller	m-day	1	Bucket	Nr	1	Rig			
			Ast. driller	m-day	1	Inner	Nr	0.25	machine	hrs.	4	There is no change in rate regarding depth beyond 100m.
			Driller helper	m-day	6	Piston rod	Nr	0.25	Water truck	hrs.	5.5	
			camp helper	m-day	1	Gland packing	set	2	pick up truck	hrs.	2	
			welder	m-day	1	Suel packing	set	2	water pump	hrs.	11	
			Heavy driver	m-day	1	V-packing	set	2	welding			
			Light dirver	m-day	1	Valve	Nr	0.25	generator	hrs	1	
			watch man	m-day	2	valve seat	Nr	0.25				
						Valve packing	Nr	2				
						Welding rod	pkt	0.75				
						Sodium hexa Metaphosphate	kg	20				
	12.6 Well development by compressor machine for well size of 6/10"	1 well	Hy. Goe	m-day	7				Rig			
			Driller	m-day	9				machine	hrs.	4	
			Driller helper	m-day	18				compressor	hrs.	72	
			camp helper	m-day	18				generator	hrs.	30	
			Light dirver	m-day	9							
			watch man	m-day	9							

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty.	
28.	12.7 Well development by pump (6/10")	1 well	Hy.Geo	m-day	5	Gasket	set	4	vt/submers-			
			Asst. Geo	m-day	7	Gland Packing	set	6	ible pump set	hr	50	
			Pump test Asst.	m-day	7				generator or diesel			
			Pump helper	m-day	14				motor	hr	50	
			Campworker	m-day	14				discharge			
			watch man	m-day	7				meter	hr	50	
									water table indicator	hr	50	
									6"pipe T	hr	50	
									Pick up truck	hr	5	
									tripod set	hr	50	
	13.1 Pump test for shallow tubewell											
	(a) Time draw down pump test for shallow tubewell (Aquifer test)	1 well	Hy.Geo	m-day	0.8	Gasket	set	3	Centrifugal			Rates are
			Pump test Asst.	m-day	0.8	Gland Packing	set	5	pump	hr	6	inclusive of
					1.6				Pick up truck	hr	2	works
			Pump helper	m-day	2.4				generator	hr	2	concerning the
			Campworker	m-day	0.8				orifice	hr	6	installation
			watch man	m-day	0.8				water table			and
									indicator	hr	6	dismantle of
									4" Pipe	hr	6	pump and
												other
	(b) Step draw down pump test for shallow tubewell (well test)	1 well	Hy.Geo	m-day	0.8	Gasket	set	3	Centrifugal			machinary.
			Pump test Asst.	m-day	0.8	Gland Packing	set	5	pump	hr	6	
									Pick up truck	hr	6	
			Pump helper	m-day	1.6				generator	hr	2	
			Campworker	m-day	2.4				orifice	hr	62	
			Ast. Hy. Geo	m-day	0.8				water table			
			watch man	m-day	0.8				indicator	hr	6	
									4" Pipe	hr	6	
	© Recovery test for shallow tubewell	1 well	Hy.Geo	m-day	0.5				Water table	hr	3	
			Pump test Asst.	m-day	0.5				indicator			
			Pump helper	m-day	1.5							
			Campworker	m-day	1.5							
			Ast. Hy. Geo	m-day	0.5							
			watch man	m-day	0.5							
	13.2 Pump test for deep tubewell											
	(a) Time draw down pump test for deep tubewell (Aquifer tes	1 well	Hy.Geo	m-day	2	Gasket	set	4	vt/submers-			Rates are
			Pump test			Gland Packing	set	6	ible pump set	hr	24	inclusive of
			Asst.	m-day	2				generator			works
			Pump helper	m-day	12				or diesel			concerning the
			Campworker	m-day	15				motor	hr	24	installation
			Ast. Hy. Geo	m-day	2				water table			and
			watch man	m-day	2				indicator	hr	24	dismantle of
									6"pipe T	hr	24	pump and
									Pick up truck	hr	3	other
									tripod set	hr	24	machinary.

S. N.	Description of work	unit	Resources									Remarks
			Labour			Constr. Materials			Machinery			
			Class	Unit	Qty.	Type	Unit	Qty	Type	Unit	Qty.	
28.	b. Recovery test for deep tubewell	1 well	Hy.Geo pump test	m-day	2				elec. generator	hr.	6	
			Asst.	m-day	2				water table			
			Pump helper	m-day	12				indicator	hr.	16	
			Campworker	m-day	4				pick up			
			Ast. Hy. Geo	m-day	2				truck	hr.	2	
			watch man	m-day	2							
	c. Step drew down pump test for deep tubewell (well test)	1 well	Hy.Geo pump test	m-day	3				vt/submersible pump set	hr.	24	
			Asst.	m-day	3				generator]or diesel			
			Pump helper	m-day	18				motor	hr.	24	
			Campworker	m-day	9				waller table			
			Ast. Hy. Geo	m-day	3				indicator	hr	24	
			watch man	m-day	3				6" pipe T	hr	24	
	d. Add 7% to the above rates for anyh minor repair works, small tools & replacing of minor spare parts etc. incase of both shallow/deep tubewells.								pick up truck	hr	3	
	14. Logging of bore hole.		Hy.Geo	m-day	2	Power cells	Nr	6	Electric logging	hr.	12	The rates for electrical logging includes all necessary tools etc. & is the same for all types and depth of bore holes
			driller	m-day	2	Batteries			machine set			
	14.1 Electric logging of bore hole after drilling of pilot hole for deepths of 100m	100 m	Diller helper	m-day	4							
			Camp. helper	m-day	2							
			Ast. Hy. Geo	m-day	2							
			watch man	m-day	2							
	14.2 Add 3% of the above rate for small tools and transportation to and form site of all required machinary.											
	15. Requirement of steel blind pipe and screen.	1m.				Steel pipe as specified in design	m	1				
	15.1 Supply & use of all diameters of casing or blind pipes for all types and depths of tubewells.	1 m.				screen as specified in design	m	1				
	15.2 Supply and use of all diameters of screen with specified opening for all types of tubewells											