

CHAPTER - 1 CARRIAGE OF MATERIALS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.1		Loading and Unloading of Stone Boulder/ Stone aggregates/Sand/ Kanker/Moorum	cum				
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip					
		Unit = cum					
		Taking output = 5.5 cum					
		Time required for					
		i) Positioning of tipper at loading point		1 Min			
		ii) Loading by front end loader 1 cum bucket capacity @ 25 cum per hour		13 Min			
		iii) Maneuvering, reversing, dumping and turning for return		2 Min			
		iv) Waiting time, unforeseen contingencies etc		4 Min			
		Total		20 Min			
		a) Machinery					
		Tipper 5.5 tonnes capacity	hour	0.330	1010.00	333.30	P&M-13
		Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.330	900.00	297.00	P&M-06
		b) Overhead charges @ 0.055 on (a)				34.67	
		c) Contractor's profit @ 0.1 on (a+b)				66.50	
		Cost for 5.5 cum = a+b+c				731.46	
		Rate per cum = (a+b+c)/ 5.5				132.99	
	Note	Unloading will be by tipping.			say	133.00	
1.2		Loading and Unloading of Boulders by Manual Means					
		Unit = cum					
		Taking output = 5.5 cum					
		a) Labour					
		Mate	day	0.110	314.67	34.61	L-12
		Mazdoor for loading and unloading	day	0.750	300.36	225.27	L-13
		b) Machinery					
		Tipper 5.5 tonne capacity	hour	0.750	1010.00	757.50	P&M-13
		c) Overhead charges @ 0.055 on (a+b)				55.96	
		d) Contractor's profit @ 0.1 on (a+b+c)				107.33	
		Cost for 5.5 cum = a+b+c+d				1180.67	
		Rate per cum = (a+b+c+d)/5.5				214.67	
	Note	Unloading will be by tipping.			say	215.00	
1.3		Loading and Unloading of Cement or Steel by Manual Means and Stacking.					
		Unit = tonne					
		Taking output = 10 tonnes					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoor for loading and unloading	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Truck 10 tonne capacity	hour	2.000	889.00	1778.00	P&M-74
		c) Overhead charges @ 0.055 on (a+b)				132.21	
		d) Contractor's profit @ 0.1 on (a+b+c)				253.61	
		Cost for 10 tonnes = a+b+c+d				2789.72	
		Rate per tonnes = (a+b+c+d)/10				278.97	
					say	279.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.4		Cost of Haulage Excluding Loading and Unloading					
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.					
		<i>Unit = t.km</i>					
		<i>Taking output 10 tonnes load and lead 10 km = 100 t.km</i>					
	(i)	Surfaced Road					
		Speed with load : 25 km / hour.					
		Speed while Returning empty :35 km / hour.					
		a) Machinery.					
		Tipper 10 tonne capacity					
		Time taken for onward haulage with load	hour	0.400	1010.00	404.00	P&M-13
		Time taken for empty return trip.	hour	0.290	1010.00	292.90	P&M-13
		b) Overhead charges @ 0.055 on (a)				38.33	
		c) Contractor's profit @ 0.1 on (a+b)				73.52	
		cost for 100 t km = a+b+c				808.75	
		Rate per t.km = (a+b+c)/100				8.09	
					<i>say</i>	8.10	
1.4	(ii)	Unsurfaced Graveled Road					
		Speed with load: 20 km / hour					
		Speed for empty return trip :30 km / hour					
		a) Machinery					
		Tipper 10 tonnes capacity					
		Time taken for onward haulage with load	hour	0.500	1010.00	505.00	P&M-13
		Time taken for empty return trip	hour	0.330	1010.00	333.30	P&M-13
		b) Overhead charges @ 0.055 on (a)				46.11	
		c) Contractor's profit @ 0.1 on (a+b)				88.44	
		Cost for 100 t .km = a+b+c				972.85	
		Rate per t.Km = (a+b+c)/100				9.73	
					<i>say</i>	9.70	
1.4	(iii)	Katcha Track and Track in River Bed/Nallah Bed and Choked Bed					
		Speed with load :10 km / hour					
		Speed while returning empty:15 km / hour					
		a) Machinery					
		Tipper 10 tonnes capacity					
		Time taken for onward haulage	hour	1.000	1010.00	1010.00	P&M-13
		Time taken for empty return trip	hour	0.670	1010.00	676.70	P&M-13
		b) Overhead charges @ 0.055 on (a)				92.77	
		c) Contractor's profit @ 0.1 on (a+b)				177.95	
		Cost for 100 t .km = a+b+c				1957.42	
		Rate per t.Km = (a+b+c)/100				19.57	
					<i>say</i>	19.60	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.5		Hand Broken Stone Aggregates 63 mm Nominal Size					
		Supply of quarried stone, hand breaking into coarse aggregate 63 mm nominal size (passing 80 mm and retained on 50 mm sieve) and stacking as directed					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Labour					
		Mate	day	0.060	314.67	18.88	L-12
		Mazdoor	day	1.500	300.36	450.54	L-13
		b) Material					
		Supply of quarried stone 150 - 200 mm size	cum	1.100	630.00	693.00	M-017
		c) Overhead charges @ 0.055 on (a+b)				63.93	
		d) Contractor's profit @ 0.1 on (a+b+c)				122.64	
		Rate per cum = a+b+c+d				1348.99	
					<i>say</i>	1349.00	
1.6		Crushing of Stone Aggregates 13.2 mm Nominal Size					
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 13.2 mm nominal size					
		<i>Unit = cum</i>					
		<i>Taking Output = 600 cum at crusher location.</i>					
		a) Labour					
		Mate	day	0.760	314.67	239.15	L-12
		Mazdoor Skilled	day	2.000	414.80	829.60	L-15
		Mazdoor including breaking of any oversize boulder.	day	17.000	300.36	5106.12	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	598.00	478400.00	M-016
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	16760.52	100563.12	P&M-10
		Front end loader 1 cum bucket capacity	Hour	20.000	900.00	18000.00	P&M-06
		Tipper 5.5 cum capacity	Hour	20.000	1010.00	20200.00	P&M-13
		d) Overhead charges @ 0.055 on (a+b+c)				34283.59	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				65762.16	
		Cost for 600 cum = (a+b+c+d+e)x0.95				687214.55	
		Rate per cum = (a+b+c+d+e) * 0.95 / 600				1145.36	
					<i>say</i>	1145.00	
		Note					
		1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.					
		2. 95 per cent of above cost will be attributed to the production of 600 cum of stone chips of 13.2 mm size and balance 5 per cent to the production of stone dust which comes out as a by-product					
		3. The integrated stone crusher includes primary and secondary crushing units.					
1.7		Crushing of Stone Aggregates 20 mm Nominal Size					
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 20 mm nominal size					
		<i>Unit = cum</i>					
		<i>Taking Output = 670 cum at crusher location.</i>					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
		a) Labour					
		Mate	day	0.760	314.67	239.15	L-12
		Mazdoor Skilled	day	2.000	414.80	829.60	L-15
		Mazdoor including breaking of any size boulder.	day	17.000	300.36	5106.12	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	598.00	478400.00	M-016
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	16760.52	100563.12	P&M-10
		Front end loader 1 cum bucket capacity	Hour	20.000	900.00	18000.00	P&M-06
		Tipper 5.5 cum capacity	Hour	20.000	1010.00	20200.00	P&M-13
		d) Overhead charges @ 0.055 on (a+b+c)				34283.59	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				65762.16	
		Cost for 670 cum = (a+b+c+d+e)x0.90				651045.36	
		Rate per cum = (a+b+c+d+e) * 0.90 / 670				971.71	
					say	972.00	
		Note					
		1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 20 and 40 mm.					
		2. 90 per cent of above cost will be attributed to the production of 670 cum of stone aggregates of 20mm size and balance 10 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.					
		3. The integrated stone crusher includes primary and secondary crushing units.					
1.8		Crushing of Stone Aggregates 40 mm Nominal Size					
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 40 mm nominal size.					
		Unit = cum					
		Taking Output = 750 cum at crusher location.					
		a) Labour					
		Mate	day	0.760	314.67	239.15	L-12
		Mazdoor Skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	17.000	300.36	5106.12	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	598.00	478400.00	M-016
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	16760.52	100563.12	P&M-10
		Front end loader 1 cum bucket capacity	Hour	20.000	900.00	18000.00	P&M-06
		Tipper 5.5 cum capacity	Hour	20.000	1010.00	20200.00	P&M-13
		d) Overhead charges @ 0.055 on (a+b+c)				34283.59	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				65762.16	
		Cost for 750 cum = (a+b+c+d+e)x0.85				614876.18	
		Rate per cum = (a+b+c+d+e)x0.85/750				819.83	
					say	820.00	
		Note					
		1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.					
		2. 85 per cent of above cost will be attributed to the production of 750 cum of stone aggregates of 40mm size and balance 15 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.					
		3. The integrated stone crusher includes primary and secondary crushing units.					

CHAPTER - 2
SITE CLEARANCE

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.1	201	Cutting of Trees, including cutting of Trunks, Branches and Removal					
		Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 metres and earth filling in the depression / pit.					
		Unit = Each					
	(i)	Girth from 300 mm to 600 mm					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres lead by manual means.	day	0.600	300.36	180.22	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	168.75	16.88	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				11.19	
		d) Contractor's profit @ 0.1 on (a+b+c)				21.46	
		Rate for each tree = a+b+c+d				236.03	
					say	236.00	
2.1	(ii)	Girth from 600 mm to 900 mm					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoors for cutting trees including cutting, refilling, compaction of backfilling, and stacking of serviceable materials within 1000 metres lead by manual means	day	0.900	300.36	270.32	L-13
		b) Machinery					
		Tractor-trolley	hour	0.300	168.75	50.63	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				18.34	
		d) Contractor's profit @ 0.1 on (a+b+c)				35.19	
		Rate for each tree = a+b+c+d				387.07	
					say	387.00	
2.1	(iii)	Girth from 900 mm to 1800 mm					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Tractor-trolley	hour	0.400	168.75	67.50	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				38.14	
		d) Contractor's profit @ 0.1 on (a+b+c)				73.15	
		Rate for each tree = a+b+c+d				804.68	
					say	805.00	
2.1	(iv)	Girth above 1800 mm					
		a) Labour					
		Mate	day	0.160	314.67	50.35	L-12
		Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	4.000	300.36	1201.44	L-13
		b) Machinery					
		Tractor-trolley	hour	0.600	168.75	101.25	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				74.42	
		d) Contractor's profit @ 0.1 on (a+b+c)				142.75	
		Rate for each tree = a+b+c+d				1570.20	
					say	1570.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.2	201	Clearing Grass and Removal of Rubbish					
		Clearing grass and removal of rubbish up to a distance of 50 metres outside the periphery of the area .					
		By Manual Means					
		Unit = Hectare					
		Taking output = 1 Hectare					
		a) Labour					
		Mate	day	2.000	314.67	629.34	L-12
		Mazdoor	day	50.000	300.36	15018.00	L-13
		b) Overhead charges @ 0.055 on (a)				860.60	
		c) Contractor's profit @ 0.1 on (a+b)				1650.79	
		Rate per Hectare = a+b+c				18158.74	
					say	18159.00	
2.3	201	Clearing and Grubbing Road Land .					
		Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.					
		Unit = Hectare					
		Taking output = 1 Hectare					
		(i) By Manual Means:-					
	A	In area of light jungle					
		a) Labour					
		Mate	day	6.000	314.67	1888.02	L-12
		Mazdoor	day	150.000	300.36	45054.00	L-13
		b) Machinery					
		Tractor-trolley	hour	1.000	168.75	168.75	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				2591.09	
		d) Contractor's profit @ 0.1 on (a+b+c)				4970.19	
		Rate per Hectare = a+b+c+d				54672.05	
					say	54672.00	
2.3 (i)	B	In area of thorny jungle					
		a) Labour					
		Mate	day	8.000	314.67	2517.36	L-12
		Mazdoor	day	200.000	300.36	60072.00	L-13
		b) Machinery					
		Tractor-trolley	hour	2.000	168.75	337.50	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				3460.98	
		d) Contractor's profit @ 0.1 on (a+b+c)				6638.78	
		Rate per Hectare = a+b+c+d				73026.62	
					say	73027.00	
2.3	(ii)	By Mechanical Means					
	A	In area of light jungle					
		a) Labour					
		Mate	day	0.160	314.67	50.35	L-12
		Mazdoor	day	4.000	300.36	1201.44	L-13
		b) Machinery					
		Dozer 80 HP with attachment for removal of trees & stumps	hour	10.000	1500.00	15000.00	P&M-42
		Tractor-trolley	hour	1.000	168.75	168.75	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				903.13	
		d) Contractor's profit @ 0.1 on (a+b+c)				1732.37	
		Rate per Hectare = a+b+c+d				19056.03	
					say	19056.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.3 (ii)		B	In area of thorny jungle					
			a) Labour					
			Mate	day	0.240	314.67	75.52	L-12
			Mazdoor	day	6.000	300.36	1802.16	L-13
			b) Machinery					
			Dozer 80 HP with attachment for removal of trees & stumps	hour	12.000	1500.00	18000.00	P&M-42
			Tractor-trolley	hour	1.500	168.75	253.13	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				1107.19	
			d) Contractor's profit @ 0.1 on (a+b+c)				2123.80	
			Rate per Hectare = a+b+c+d				23361.80	
						say	23362.00	
2.4	202		Dismantling of Structures					
			Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres					
			Unit = cum					
			Taking output = 1.25 cum					
		(i)	Lime /Cement Concrete					
		I	By Manual Means					
		A	Lime Concrete, cement concrete grade M-10 and below					
			a) Labour					
			Mate	day	0.040	314.67	12.59	L-12
			Mazdoor for dismantling and loading	day	1.000	300.36	300.36	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				19.72	
			d) Contractor's profit @ 0.1 on (a+b+c)				37.82	
			Cost for 1.25 cum = a+b+c+d				416.05	
			Rate per cum = (a+b+c+d)/ 1.25				332.84	
						say	333.00	
2.4 (i)		B	Cement Concrete Grade M-15 & M-20					
			a) Labour					
			Mate	day	0.050	314.67	15.73	L-12
			Mazdoor for dismantling and loading	day	1.250	300.36	375.45	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				24.02	
			d) Contractor's profit @ 0.1 on (a+b+c)				46.08	
			Cost for 1.25 cum = a+b+c+d				506.84	
			Rate per cum = (a+b+c+d)/ 1.25				405.47	
						say	405.00	
2.4 (i)		C	Prestressed / Reinforced cement concrete grade M-20 & above					
			a) Labour					
			Mate	day	0.150	314.67	47.20	L-12
			Blacksmith	day	0.250	479.16	119.79	L-02
			Mazdoor for dismantling, loading and unloading	day	3.500	300.36	1051.26	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				69.51	

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			d) Contractor's profit @ 0.1 on (a+b+c)				133.33	
			Cost for 1.25 cum = a+b+c+d				1466.65	
			Rate per cum = (a+b+c+d)/ 1.25				1173.32	
						say	1173.00	
2.4		II	By Mechanical Means for items No. 202(B)& (C)					
		A	Cement Concrete Grade M-15 & M-20					
			a) Labour					
			Mate	day	0.020	314.67	6.29	L-12
			Mazdoor for loading and unloading	day	0.250	300.36	75.09	L-13
			Mazdoor with Pneumatic breaker	day	0.250	314.67	78.67	L-14
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.5 cum per hour	hour	0.670	293.76	196.82	P&M-032
			Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				22.13	
			d) Contractor's profit @ 0.1 on (a+b+c)				42.46	
			Cost for 1.25 cum = a+b+c+d				467.02	
			Rate per cum = (a+b+c+d)/ 1.25				373.62	
						say	374.00	
2.4 II		B	Prestressed / reinforced cement concrete grade M-20 & above					
			a) Labour					
			Mate	day	0.050	314.67	15.73	L-12
			Mazdoor with Pneumatic breaker	day	0.660	314.67	207.68	L-14
			Blacksmith	day	0.250	479.16	119.79	L-02
			Mazdoor for loading and unloading	day	0.250	300.36	75.09	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.00 cum per hour	hour	1.000	293.76	293.76	P&M-032
			Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				41.67	
			d) Contractor's profit @ 0.1 on (a+b+c)				79.93	
			Cost for 1.25 cum = a+b+c+d				879.22	
			Rate per cum = (a+b+c+d)/ 1.25				703.37	
						say	703.00	
2.4		(ii)	Dismantling Brick / Tile work					
		A	In lime mortar					
			a) Labour					
			Mate	day	0.020	314.67	6.29	L-12
			Mazdoor for dismantling, loading and unloading	day	0.500	300.36	150.18	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				11.11	
			d) Contractor's profit @ 0.1 on (a+b+c)				21.31	
			Cost for 1.25 cum = a+b+c+d				234.46	
			Rate per cum = (a+b+c+d)/ 1.25				187.57	
						say	188.00	
2.4 (ii)		B	In cement mortar					
			a) Labour					
			Mate	day	0.030	314.67	9.44	L-12
			Mazdoor for dismantling, loading and unloading	day	0.750	300.36	225.27	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				15.41	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) Contractor's profit @ 0.1 on (a+b+c)				29.57	
		Cost for 1.25 cum = a+b+c+d				325.26	
		Rate per cum = (a+b+c+d)/ 1.25				260.21	
					say	<u>260.00</u>	
2.4 (ii)	C	In mud mortar					
		a) Labour					
		Mate	day	0.016	314.67	5.03	L-12
		Mazdoor for dismantling and loading	day	0.400	300.36	120.14	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				9.39	
		d) Contractor's profit @ 0.1 on (a+b+c)				18.01	
		Cost for 1.25 cum = a+b+c+d				198.15	
		Rate per cum = (a+b+c+d)/ 1.25				158.52	
					say	<u>159.00</u>	
2.4 (ii)	D	Dry brick pitching or brick soling					
		a) Labour					
		Mate	day	0.014	314.67	4.41	L-12
		Mazdoor for Dismantling, loading and unloading	day	0.350	300.36	105.13	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				8.53	
		d) Contractor's profit @ 0.1 on (a+b+c)				16.36	
		Cost for 1.25 cum = a+b+c+d				179.99	
		Rate per cum = (a+b+c+d)/ 1.25				143.99	
					say	<u>144.00</u>	
2.4	(iii)	Dismantling Stone Masonry					
	A	Rubble stone masonry in lime mortar					
		a) Labour					
		Mate	day	0.024	314.67	7.55	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.600	300.36	180.22	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				12.83	
		d) Contractor's profit @ 0.1 on (a+b+c)				24.62	
		Cost for 1.25 cum = a+b+c+d				270.78	
		Rate per cum = (a+b+c+d)/ 1.25				216.62	
					say	<u>217.00</u>	
2.4 (iii)	B	Rubble stone masonry in cement mortar.					
		a) Labour					
		Mate	day	0.030	314.67	9.44	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.750	300.36	225.27	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				15.41	
		d) Contractor's profit @ 0.1 on (a+b+c)				29.57	
		Cost for 1.25 cum = a+b+c+d				325.26	
		Rate per cum = (a+b+c+d)/ 1.25				260.21	
					say	<u>260.00</u>	
2.4 (iii)	C	Rubble Stone Masonry in mud mortar.					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.500	300.36	150.18	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				11.11	
		d) Contractor's profit @ 0.1 on (a+b+c)				21.31	
		Cost for 1.25 cum = a+b+c+d				234.46	
		Rate per cum = (a+b+c+d)/ 1.25				187.57	
					say	188.00	
2.4 (iii)	D	Dry rubble masonry					
		a) Labour					
		Mate	day	0.018	314.67	5.66	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.450	300.36	135.16	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				10.25	
		d) Contractor's profit @ 0.1 on (a+b+c)				19.66	
		Cost for 1.25 cum = a+b+c+d				216.30	
		Rate per cum = (a+b+c+d)/ 1.25				173.04	
					say	173.00	
2.4 (iii)	E	Dismantling stone pitching/ dry stone spalls.					
		a) Labour					
		Mate	day	0.016	314.67	5.03	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.400	300.36	120.14	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				9.39	
		d) Contractor's profit @ 0.1 on (a+b+c)				18.01	
		Cost for 1.25 cum = a+b+c+d				198.15	
		Rate per cum = (a+b+c+d)/ 1.25				158.52	
					say	159.00	
2.4 (iii)	F	Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoor for dismantling, loading and unloading	day	0.500	300.36	150.18	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				11.11	
		d) Contractor's profit @ 0.1 on (a+b+c)				21.31	
		Cost for 1.25 cum = a+b+c+d				234.46	
		Rate per cum = (a+b+c+d)/ 1.25				187.57	
					say	188.00	
2.4	(iv)	Wood Work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level					
		a) Labour					
		Mate	day	0.060	314.67	18.88	L-12
		Carpenter	day	0.500	414.80	207.40	L-04
		Mazdoor for dismantling, loading and unloading.	day	1.000	300.36	300.36	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	168.75	45.56	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				31.47	
		d) Contractor's profit @ 0.1 on (a+b+c)				60.37	
		Cost for 1.25 cum = a+b+c+d				664.04	
		Rate per cum = (a+b+c+d)/ 1.25				531.23	
					say	531.00	
2.4	(v)	Steel Work in all types of sections upto a height of 5 m above plinth level excluding cutting of rivet.					
		Unit = tonne					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Taking output = 1 tonne					
	A	Including dismembering					
		a) Labour					
		Mate	day	0.140	314.67	44.05	L-12
		Blacksmith	day	1.000	479.16	479.16	L-02
		Mazdoor for dismantling, loading and unloading	day	2.500	300.36	750.90	L-13
		Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				31.85	
		b) Machinery					
		Tractor-trolley	hour	0.170	168.75	28.69	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				73.41	
		d) Contractor's profit @ 0.1 on (a+b+c)				140.81	
		Rate per tonne = a+b+c+d				1548.87	
					say	1549.00	
2.4 (v)	B	Excluding dismembering.					
		a) Labour					
		Mate	day	0.220	314.67	69.23	L-12
		Mazdoor for dismantling, loading and unloading	day	2.000	300.36	600.72	L-13
		Blacksmith	day	0.500	479.16	239.58	L-02
		Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				22.74	
		b) Machinery					
		Tractor-trolley	hour	0.170	168.75	28.69	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				52.85	
		d) Contractor's profit @ 0.1 on (a+b+c)				101.38	
		Rate per tonne = a+b+c+d				1115.19	
					say	1115.00	
2.4 (v)	C	Extra over item No(v) A and(v) B for cutting rivets.					
		Unit = each					
		Taking output = 10 rivets					
		a) Labour					
		Mate	day	0.010	314.67	3.15	L-12
		Blacksmith	day	0.130	479.16	62.29	L-02
		Mazdoor	day	0.130	300.36	39.05	L-13
		b) Overhead charges @ 0.055 on (a)				5.75	
		c) Contractor's profit @ 0.1 on (a+b)				11.02	
		Cost for 10 rivets = a+b+c				121.25	
		Rate for each rivet = (a+b+c)/10				12.13	
					say	12.10	
2.4	(vi)	Scraping of Bricks Dismantled from Brick Work including Stacking.					
		Unit = numbers					
		Taking output = 1000 numbers					
	A	In lime/Cement mortar					
		a) Labour					
		Mate	day	0.140	314.67	44.05	L-12
		Mazdoor	day	3.500	300.36	1051.26	L-13
		b) Overhead charges @ 0.055 on (a)				60.24	
		c) Contractor's profit @ 0.1 on (a+b)				115.56	
		Rate per 1000 Nos = a+b+c				1271.11	
					say	1271.00	
2.4 (iv)	B	In mud mortar					
		a) Labour					
		Mate	day	0.050	314.67	15.73	L-12
		Mazdoor	day	1.250	300.36	375.45	L-13
		b) Overhead charges @ 0.055 on (a)				21.52	
		c) Contractor's profit @ 0.1 on (a+b)				41.27	
		Rate per 1000 Nos = a+b+c				453.97	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	<u>454.00</u>	
2.4		(vii)	Scraping of Stone from Dismantled Stone Masonry					
			Unit = cum					
			Taking output = 1 cum					
		A	In cement and lime mortar					
			a) Labour					
			Mate	day	0.060	314.67	18.88	L-12
			Mazdoor	day	1.400	300.36	420.50	L-13
			b) Overhead charges @ 0.055 on (a)				24.17	
			c) Contractor's profit @ 0.1 on (a+b)				46.36	
			Rate per cum = a+b+c				509.91	
						say	<u>510.00</u>	
2.4 (vii)		B	In Mud mortar					
			a) Labour					
			Mate	day	0.010	314.67	3.15	L-12
			Mazdoor	day	0.300	300.36	90.11	L-13
			b) Overhead charges @ 0.055 on (a)				5.13	
			c) Contractor's profit @ 0.1 on (a+b)				9.84	
			Rate per cum = a+b+c				108.22	
						say	<u>108.00</u>	
2.4		(viii)	Scarping Plaster in Lime or Cement Mortar from Brick/ Stone Masonry					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.160	314.67	50.35	L-12
			Mazdoor for scarping and loading	day	4.000	300.36	1201.44	L-13
			b) Machinery					
			Tractor-trolley	hour	0.320	168.75	54.00	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				71.82	
			d) Contractor's profit @ 0.1 on (a+b+c)				137.76	
			Cost for 100 sqm = a+b+c+d				1515.37	
			Rate per sqm = (a+b+c+d)/100				15.15	
						say	<u>15.20</u>	
2.4		(ix)	Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works.					
			Unit = metre					
			Taking output = 1 metre					
		A	Up to 600 mm dia					
			a) Labour					
			Mate	day	0.020	314.67	6.29	L-12
			Mazdoor	day	0.520	300.36	156.19	L-13
			b) Overhead charges @ 0.055 on (a)				8.94	
			c) Contractor's profit @ 0.1 on (a+b)				17.14	
			Rate per metre = a+b+c				188.56	
						say	<u>189.00</u>	
2.4 (ix)		B	Above 600 mm to 900 mm dia					
			a) Labour					
			Mate	day	0.030	314.67	9.44	L-12
			Mazdoor	day	0.700	300.36	210.25	L-13
			b) Overhead charges @ 0.055 on (a)				12.08	
			c) Contractor's profit @ 0.1 on (a+b)				23.18	
			Rate per metre = a+b+c				254.95	
						say	<u>255.00</u>	
2.4 (ix)		C	Above 900 mm					
			a) Labour					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mate	day	0.050	314.67	15.73	L-12
		Mazdoor	day	1.200	300.36	360.43	L-13
		b) Overhead charges @ 0.055 on (a)				20.69	
		c) Contractor's profit @ 0.1 on (a+b)				39.69	
		Rate per metre = a+b+c				436.54	
					say	437.00	
		Note					
		1. The excavation of earth, dismantling of stone masonry work in head walls and protection works is not included which is to be measured and paid separately.					
		2. Credit for retrieved stone from masonry work may be taken as per actual availability.					
2.5	202	Dismantling of Flexible Pavements					
		Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately					
		Unit = cum					
		Taking output = 1 cum					
		I					
		A					
		By Manual Means					
		Bituminous courses					
		a) Labour					
		Mate	day	0.060	314.67	18.88	L-12
		Mazdoor for dismantling, loading and unloading	day	1.500	300.36	450.54	L-13
		b) Machinery					
		Tractor-trolley	hour	0.380	168.75	64.13	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				29.34	
		d) Contractor's profit @ 0.1 on (a+b+c)				56.29	
		Rate per cum = a+b+c+d				619.18	
					say	619.00	
2.5 I		B					
		Granular courses					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor for dismantling, loading and unloading.	day	1.000	300.36	300.36	L-13
		b) Machinery					
		Tractor-trolley	hour	0.330	168.75	55.69	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				20.27	
		d) Contractor's profit @ 0.1 on (a+b+c)				38.89	
		Rate per cum = a+b+c+d				427.80	
					say	428.00	
2.5		II					
		A					
		By Mechanical Means					
		Bituminous course					
		a) Labour					
		Mate	day	0.010	314.67	3.15	L-12
		Mazdoor	day	0.300	300.36	90.11	L-13
		b) Machinery					
		Tractor-trolley	hour	0.380	168.75	64.13	P&M-72
		Farm tractor with ripper @ 60 cum per hour	hour	0.017	285.12	4.85	P&M-15
		c) Overhead charges @ 0.055 on (a+b)				8.92	
		d) Contractor's profit @ 0.1 on (a+b+c)				17.11	
		Rate per cum = a+b+c+d				188.26	
					say	188.00	
2.6	202	Dismantling of Cement Concrete Pavement					
		Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately					
		Unit = cum					
		Taking output = 1 cum					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.030	314.67	9.44	L-12
		Semi skilled mazdoor for operating pneumatic tools	day	0.500	314.67	157.34	L-14
		Mazdoors as helpers including loading and unloading	day	0.500	300.36	150.18	L-13
		b) Machinery					
		Air compressor 250 cfm with two leads for pneumatic cutters/ hammers @ 1 cum per hour	hour	1.000	293.76	293.76	P&M-032
		Tractor-trolley	hour	0.400	168.75	67.50	P&M-72
		Joint Cutting Machine with 2-3 blades	hour	1.000	214.92	214.92	P&M-18
		c) Overhead charges @ 0.055 on (a+b)				49.12	
		d) Contractor's profit @ 0.1 on (a+b+c)				94.23	
		Rate per cum = a+b+c+d				1036.48	
					say	1036.00	
		Note	The above analysis is for removal of complete pavement. In case full depth repair work is required to be done after dismantling, provision of a concrete cutting and sawing machine may be added for 0.25 hours.				
2.7	202	Dismantling of Guard Rails					
		Dismantling guard rails by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable materials and unserviceable materials separately.					
		Unit = running metre					
		Taking output = 1 metre					
		a) Labour					
		Mate	day	0.006	314.67	1.89	L-12
		Mazdoor including loading and unloading	day	0.150	300.36	45.05	L-13
		b) Machinery					
		Tractor-trolley	hour	0.050	168.75	8.44	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				3.05	
		d) Contractor's profit @ 0.1 on (a+b+c)				5.84	
		Rate per metre = a+b+c+d				64.27	
					say	64.00	
2.8	202	Dismantling of Kerb Stone					
		Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre					
		Unit = running metre					
		Taking output = 10 metre					
		a) Labour					
		Mate	day	0.010	314.67	3.15	L-12
		Mazdoor including loading and unloading	day	0.150	300.36	45.05	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Machinery					
		Tractor-trolley	hour	0.200	168.75	33.75	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				4.51	
		d) Contractor's profit @ 0.1 on (a+b+c)				8.65	
		Cost for 10 m = a+b+c+d				95.10	
		Rate per metre = (a+b+c+d)/10				9.51	
					say	10.00	
2.9	202	Dismantling of Kerb Stone Channel					
		Dismantling kerb stone channel by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre					
		Unit = running metre					
		Taking output = 10 metre					
		a) Labour					
		Mate	day	0.015	314.67	4.72	L-12
		Mazdoor including loading and unloading	day	0.225	300.36	67.58	L-13
		b) Machinery					
		Tractor-trolley	hour	0.300	168.75	50.63	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				6.76	
		d) Contractor's profit @ 0.1 on (a+b+c)				12.97	
		Cost for 10 m = a+b+c+d				142.66	
		Rate per metre = (a+b+c+d)/10				14.27	
					say	14.00	
2.10	202	Dismantling of Kilometre Stone					
		Dismantling of kilometre stone including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and back filling of pit.					
		Unit = Each					
		Taking output = one KM stone					
	A	5th KM stone					
		Quantity of cement concrete = 0.392 cum					
		a) Labour					
		Mate	day	0.130	314.67	40.91	L-12
		Mazdoor	day	0.750	300.36	225.27	L-13
		b) Machinery					
		Tractor-trolley	hour	0.150	168.75	25.31	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				16.03	
		d) Contractor's profit @ 0.1 on (a+b+c)				30.75	
		Rate for one 5th KM stone = a+b+c+d				338.27	
					say	338.00	
	B	Ordinary KM Stone					
		Quantity of cement concrete = 0.269 cum					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoor	day	0.500	300.36	150.18	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	168.75	16.88	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				9.53	
		d) Contractor's profit @ 0.1 on (a+b+c)				18.29	
		Rate for one ordinary KM stone = a+b+c+d				201.17	
					say	201.00	
	C	Hectometre Stone					
		Quantity of cement concrete = 0.048 cum					
		a) Labour					
		Mate	day	0.004	314.67	1.26	L-12
		Mazdoor	day	0.100	300.36	30.04	L-13
		b) Machinery					
		Tractor-trolley	hour	0.020	168.75	3.38	P&M-72

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Overhead charges @ 0.055 on (a+b)				1.91	
		d) Contractor's profit @ 0.1 on (a+b+c)				3.66	
		Rate for one Hectometre stone = a+b+c+d				40.23	
					say	<u>40.20</u>	
2.11	202	Dismantling of Fencing					
		Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable material and unserviceable material separately.					
		Unit = running metre					
		Taking output = 30 metres					
		a) Labour					
		Mate	day	0.150	314.67	47.20	L-12
		Mazdoor including loading and unloading	day	3.000	300.36	901.08	L-13
		Blacksmith	day	0.750	479.16	359.37	L-02
		b) Machinery					
		Tractor-trolley	hour	0.150	168.75	25.31	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				73.31	
		d) Contractor's profit @ 0.1 on (a+b+c)				140.63	
		Cost for 30 metres = a+b+c+d				1546.90	
		Rate per metre = (a+b+c+d)/30				51.56	
					say	<u>51.60</u>	
2.12	202	Dismantling of CI Water Pipe Line					
		Dismantling of CI water pipe line 600 mm dia including disposal with all lifts and lead upto 1000 metres and stacking of serviceable material and unserviceable material separately under supervision of concerned department					
		Unit = running metre					
		Taking output = 10 metres					
		a) Labour					
		Mate	day	0.090	314.67	28.32	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		Plumber	day	0.250	479.16	119.79	L-02
		b) Machinery					
		Truck 10 tonne capacity	hour	0.250	889.00	222.25	P&M-74
		Light Crane 3 tonne capacity	hour	0.500	540.10	270.05	P&M-41
		c) Overhead charges @ 0.055 on (a+b)				68.26	
		d) Contractor's profit @ 0.1 on (a+b+c)				130.94	
		Cost for 10 metres = a+b+c+d				1440.33	
		Rate per metre = (a+b+c+d)/10				144.03	
					say	<u>144.00</u>	
		Note					The rate analysis does not include any excavation in earth or dismantling of masonry works which are to be measured and paid separately.
2.13	202	Removal of Cement Concrete Pipe of Sewer Gutter					
		Removal of cement concrete pipe of sewer gutter 1500 mm dia under the supervision of concerned department including disposal with all lifts and up to a lead of 1000 metres and stacking of serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works.					
		Unit = running metre					
		Taking output = 10 metres					
		a) Labour					
		Mate	day	0.100	314.67	31.47	L-12
		Mazdoor	day	2.500	300.36	750.90	L-13
		b) Machinery					
		Crane 5 tonne capacity	hour	0.300	599.40	179.82	P&M-85

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Truck flat body 10 tonne	hour	1.000	889.00	889.00	P&M-74
		c) Overhead charges @ 0.055 on (a+b)				101.82	
		d) Contractor's profit @ 0.1 on (a+b+c)				195.30	
		Cost for 10 metres = a+b+c+d				2148.30	
		Rate per metre = (a+b+c+d)/10				214.83	
					say	215.00	
		Note The rate analysis does not include any excavation in earth or dismantling of masonry works which are to be measured and paid separately.					
2.14	202	Removal of Telephone / Electric Poles and Lines					
		Removal of telephone / Electric poles including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and up to a lead of 1000 metres and stacking the serviceable and unserviceable material separately					
		Unit = each					
		Taking output = 30 Nos					
		a) Labour					
		Mate	day	0.480	314.67	151.04	L-12
		Mazdoor	day	10.000	300.36	3003.60	L-13
		Electrician/Lineman	day	2.000	479.16	958.32	L-02
		b) Machinery					
		Tractor-trolley	hour	1.500	168.75	253.13	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				240.13	
		d) Contractor's profit @ 0.1 on (a+b+c)				460.62	
		Cost for 30 poles = a+b+c+d				5066.84	
		Rate per pole = (a+b+c+d)/30				168.89	
					say	169.00	

CHAPTER - 3

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.1	301	Excavation in Soil by Manual Means .					
		Excavation for roadway in soil using manual means including loading in truck for carrying of cut earth to embankment site with all lifts and lead upto 1000 metres.					
		Unit = cum					
		Taking output = 120 cum					
		a) Labour					
		Mate	day	1.800	314.67	566.41	L-12
		Mazdoor	day	45.000	300.36	13516.20	L-13
		b) Machinery					
		Truck 5.5 cum capacity	hour	10.000	889.00	8890.00	P&M-74
		c) Overhead charges @ 0.055 on (a+b)				1263.49	
		d) Contractor's profit @ 0.1 on (a+b+c)				2423.61	
		Cost of 120 cum = a+b+c+d				26659.71	
		Rate per cum = (a+b+c+d)/120				222.16	
		Royalty @ Rs. 27.48 per Cum				27.48	
		Rate per cum			say	250.00	
		(ii) Including Royalty @ Rs. 27.48 per cum, cost of watering, rolling & compaction				262.00	
		Rate per cum			say	262.00	
		Note In case there is a situation where the cross-section is of cut and fill and cut earth is required to be used in embankment in the immediate vicinity, the item of carriage in the truck shall be omitted.				164.00	
		Rate per cum			say	164.00	
3.2	301	Excavation in Ordinary Rock by Manual Means					
		(i) Excavation in ordinary rock using manual means including loading in a truck and carrying of excavated material to embankment site with in all lifts and leads upto 1000 metres including Royalty but excluding rolling , copaction & watering					
		Unit = cum					
		Taking output = 120 cum					
		a) Labour					
		Mate	day	2.800	314.67	881.08	L-12
		Mazdoor	day	70.000	300.36	21025.20	L-13
		b) Machinery					
		Truck 5.5 cum capacity	hour	10.000	889.00	8890.00	P&M-74
		c) Overhead charges @ 0.055 on (a+b)				1693.80	
		d) Contractor's profit @ 0.1 on (a+b+c)				3249.01	
		Cost for 120 cum = a+b+c+d				35739.08	
		Rate per cum = (a+b+c+d)/120				297.83	
		Royalty @ Rs. 27.48 per Cum				27.48	
		Rate per cum				325.31	
					say	325.00	
		(ii) Including Royalty @ Rs. 27.48 per Cum , watering , rolling & compaction.				338.00	
		Note In case there is a situation where the cross-section is of cut and fill and cut earth is required to be used in embankment in the immediate vicinity, the item of carriage in the truck shall be omitted. including Royalty @ Rs. 30.00 per cum				239.00	
3.3	301	Excavation in Soil with Dozer with lead upto 100 metres					
		Excavation for road way in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 metres (average lead 50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.					
		Unit = cum					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Taking output = 180 cum					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Dozer, 80 HP @ 30 cum per hour	hour	6.000	1500.00	9000.00	P&M-42
		c) Overhead charges @ 0.055 on (a+b)				529.42	
		d) Contractor's profit @ 0.1 on (a+b+c)				1015.53	
		Cost for 180 cum = a+b+c+d				11170.85	
		Rate per cum = (a+b+c+d)/180				62.06	
					say	62.00	
3.4	301	Excavation in Ordinary Rock with Dozer with lead upto 100 metres					
		Excavation for roadway in ordinary rock by deploying a dozer, 80 HP including cutting and pushing the cut earth to site of embankment upto a distance of 100 metres (average lead 50 metres), trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.					
		Unit = cum					
		Taking output = 108 cum					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Mazdoor	day	3.000	300.36	901.08	L-13
		b) Machinery					
		Dozer, 80 HP @ 20 cum per hour	hour	6.000	1500.00	9000.00	P&M-42
		c) Overhead charges @ 0.055 on (a+b)				546.64	
		d) Contractor's profit @ 0.1 on (a+b+c)				1048.55	
		Cost for 108 cum = a+b+c+d				11534.02	
		Rate per cum = (a+b+c+d)/108				106.80	
					say	107.00	
3.5	301	Excavation in Hard Rock (requiring blasting) with disposal upto 1000 metres					
		Excavation for roadway in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres					
		Unit = cum					
		Taking Output = 180 cum					
		a) Labour					
		Mate	day	0.220	314.67	69.23	L-12
		Mazdoor	day	3.000	300.36	901.08	L-13
		Driller	day	2.000	314.67	629.34	L-06
		Blaster	day	0.250	414.80	103.70	L-03
		b) Machinery					
		Dozer, 80 HP @ 30 cum per hour	hour	6.000	1500.00	9000.00	P&M-42
		Air compressor, 250 cfm with 2 jack hammer	hour	6.000	293.76	1762.56	P&M-032
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	hour	11.250	1010.00	11362.50	P&M-13
		c) Materials					
		Gelatin 80 per cent	kg	63.000	120.72	7605.36	M-059
		Electric Detonators @ 1 detonator for 2 gelatin sticks of 125 gms each	each	252.000	5.75	1447.94	M-058 /100
		Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	-109.54	(9858.60)	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				1563.27	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				2998.64	
		Cost for 180 cum = a+b+c+d+e				32985.02	
		Rate per cum = (a+b+c+d+e)/180				183.25	
					say	183.00	

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	1. The quality and availability of rock shall be checked before affording credit.					
			2. In case some rock is issued to the contractor at site, the item of carriage shall be reduced/restricted to that extent.					
3.6	301		Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with Disposal upto 1000 metres.					
			Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m (including Royalty @ Rs. 30.00 per Cum but excluding watering, rolling & compaction)					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	2.000	300.36	600.72	L-13
			b) Machinery					
			Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	1000.00	6000.00	P&M-49
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.000	1010.00	16160.00	P&M-13
			c) Overhead charges @ 0.055 on (a+b)				1253.22	
			d) Contractor's profit @ 0.1 on (a+b+c)				2403.91	
			Cost for 360 cum = a+b+c+d				26443.03	
			Rate per cum = (a+b+c+d)/360				73.45	
			Royalty @ Rs. 27.48 per Cum				27.48	
			Rate per cum				100.93	
						say	101.00	
3.7	301		Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal upto 1000 metres.					
			Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site within all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections (including Royalty @ Rs. 30.00 per Cum but excluding watering, rolling & compaction)					
			Unit = cum					
			Taking output = 240 cum					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	2.000	300.36	600.72	L-13
			b) Machinery					
			Hydraulic Excavator 0.90 cum bucket capacity @ 36 cum per hour	hour	6.000	1000.00	6000.00	P&M-49
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	11.000	1010.00	11110.00	P&M-13
			c) Overhead charges @ 0.055 on (a+b)				975.47	
			d) Contractor's profit @ 0.1 on (a+b+c)				1871.14	
			Cost for 240 cum = a+b+c+d				20582.50	
			Rate per cum = (a+b+c+d)/240				85.76	
			Royalty @ Rs. 27.48 per Cum				27.48	
			Rate per cum				113.24	
						say	113.00	
3.8	301		Excavation in Hard Rock (blasting prohibited)					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.					
	A	Mechanised					
		Unit = cum					
		Taking output = 36 cum					
		a) Labour					
		Mate	day	0.400	314.67	125.87	L-12
		Mazdoor for trimming slopes including manual loading in truck	day	10.000	300.36	3003.60	L-13
		b) Machinery					
		Hydraulic excavator with rock breaker attachment @ 6 cum per hour	hour	6.000	1000.00	6000.00	P&M-49
		Tipper 5.5 cum capacity, 1 trip per hour.	hour	6.500	1010.00	6565.00	P&M-13
		Credit for excavated rock found suitable for use @ 50 per cent of excavated quantity	cum	18.000	-109.54	-1971.72	M-1629
		c) Overhead charges @ 0.055 on (a+b)				754.75	
		d) Contractor's profit @ 0.1 on (a+b+c)				1447.75	
		Cost for 36 cum = a+b+c+d				15925.25	
		Rate per cum = (a+b+c+d)/36				442.37	
					say	442.00	
	Note	1. The quality and availability of rock shall be checked before affording credit.					
		2. In case some rock is issued to the contractor at site, the item of carriage shall be restricted/reduced to that extent.					
		3. Being small quantity, manual loading will be economical in this case and has been provided accordingly.					
3.8	B	Manual Method					
		Unit = cum					
		Taking output = 16 cum					
		a) Labour					
		Mate	day	1.640	314.67	516.06	L-12
		Mazdoor including loading in truck	day	16.000	300.36	4805.76	L-13
		Chiseller	day	24.000	414.80	9955.20	L-05
		Blacksmith	day	1.000	479.16	479.16	L-02
		b) Machinery					
		Tipper 5.5 cum capacity, 1 trip per hour.	hour	2.900	1010.00	2929.00	P&M-13
		Credit for excavated rock found suitable for use @ 50 per cent of excavated	cum	8.000	-109.54	-876.32	M-1629
		c) Overhead charges @ 0.055 on (a+b)				979.49	
		d) Contractor's profit @ 0.1 on (a+b+c)				1878.83	
		Cost for 16 cum = a+b+c+d				20667.18	
		Rate per cum = (a+b+c+d)/16				1291.70	
					say	1292.00	
	Note	1. Credit is considered for 50 per cent of quantity of work.					
		2. Loading for disposal will be done manually, being small quantity.					
		3. In case some rock is issued to contractor at site, the item of carriage shall be omitted to the extent of quantity issued to the contractor.					
3.9	301	Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres					
		Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Unit = cum					
		Taking output = 180 cum					
		a) Labour					
		Mate	day	0.220	314.67	69.23	L-12
		Mazdoor	day	3.000	300.36	901.08	L-13
		Driller	day	2.000	314.67	629.34	L-06
		Blaster	day	0.500	414.80	207.40	L-03
		b) Machinery					
		Dozer 80 HP @ 30 cum per hour	hour	6.000	1500.00	9000.00	P&M-42
		Air compressor, 250 cfm with 2 jack hammers	hour	6.000	293.76	1762.56	P&M-032
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	8.200	1010.00	8282.00	P&M-13
		c) Materials					
		Gelatin 80 per cent	kg	63.000	120.72	7605.36	M-059
		Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	1008.000	5.75	5791.77	M-058 /100
		Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	-109.54	-9858.60	M-1629
		Add 5 per cent of cost of a+b+c towards muffling arrangements to guard against any rock fly off during blasting				1489.51	
		d) Overhead charges @ 0.055 on (a+b+c)				1720.38	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				3300.00	
		Cost for 180 cum = a+b+c+d+e				36300.02	
		Rate per cum = (a+b+c+d+e)/180				201.67	
					say	202.00	
						#REF!	
	Note	1. Credit is considered for 50 per cent of quantity of blasted rock, if found suitable for construction..					
		2. In case some rock is issued to the contractor at site, the item of carriage shall be reduced to that extent.					
3.10	301	Excavation in Marshy Soil					
		Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 metres, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections (including Royalty @ Rs. 30.00 per Cum but excluding watering, rolling & compaction)					
		Unit = cum					
		Taking output = 300 cum					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Hydraulic excavator 0.90 cum bucket capacity @ 50 cum per hour	hour	6.000	1000.00	6000.00	P&M-49
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	13.640	1010.00	13776.40	P&M-13
		c) Overhead charges @ 0.055 on (a+b)				1122.13	
		d) Contractor's profit @ 0.1 on (a+b+c)				2152.44	
		Cost for 300 cum = a+b+c+d				23676.86	
		Rate per cum = (a+b+c+d)/300				78.92	
		Royalty @ Rs. 27.48 per Cum				27.48	
		Rate per cum				106.40	
					say	106.00	
3.11	301	Removal of Unserviceable Soil with Disposal upto 1000 metres					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Removal of unserviceable soil including excavation, loading and disposal upto 1000 metres lead but excluding replacement by suitable soil which shall be paid separately as per clause 305.					
		Unit = cum					
		Taking output = 360 cum					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Excavator 0.90 cum bucket capacity @ 60 cum per hour	hour	6.000	1000.00	6000.00	P&M-49
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.360	1010.00	16523.60	P&M-13
		c) Overhead charges @ 0.055 on (a+b)				1273.22	
		d) Contractor's profit @ 0.1 on (a+b+c)				2442.27	
		Cost for 360 cum = a+b+c+d				26864.99	
		Rate per cum = (a+b+c+d)/360				74.62	
					say	75.00	
		Note This item does not include replacement of unsuitable soil by suitable soil. Replacement, where required, is to be provided and paid separately under clause 305.					
3.12	303	Presplitting of Rock Excavation Slopes					
		Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and spaced drill holes, collection of the excavated rock by a 80 HP dozer, loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No. 303.					
		Unit = sqm					
		Taking output = 400 sqm (120 cum considering 300mm average depth of excavation over the existing rock face)					
		a) Labour					
		Mate	day	0.600	314.67	188.80	L-12
		Mazdoor	day	15.000	300.36	4505.40	L-13
		b) Machinery					
		Air compressor 250 cfm with 2 leads @ 20 cum per hour	hour	6.000	293.76	1762.56	P&M-032
		Dozer, 80 HP	hour	6.000	1500.00	9000.00	P&M-42
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		c) Materials					
		Gelatin 80 per cent	kg	42.000	120.72	5070.24	M-059
		Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	672.000	5.75	3861.18	M-058 /100
		d) Overhead charges @ 0.055 on (a+b+c)				1638.35	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				3142.65	
		Cost for 400 sqm = a+b+c+d+e				34569.18	
		Rate per sqm = (a+b+c+d+e)/400				86.42	
					say	86.00	
		Note In case blasted rock is used to the contractor against payment for constructed work, the cost of carriage shall be reduced to that extent.					
		Excavation for Structures					
	3.13	304 Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(i)	Ordinary soil					
			Unit = cum					
			Taking output = 10 cum					
		A	Manual Means (Depth upto 3 m)					
			a) Labour					
			Mate	day	0.320	314.67	100.69	L-12
			Mazdoor	day	8.000	300.36	2402.88	L-13
			b) Overhead charges @ 0.055 on (a)				137.70	
			c) Contractor's profit @ 0.1 on (a+b)				264.13	
			Cost for 10 cum = a+b+c				2905.40	
			Rate per cum = (a+b+c)/10				290.54	
						say	291.00	
		Note	Cost of dewatering may be added where required upto 10 per cent of labour cost Assessment for dewatering shall be made as per site conditions..					
3.13 (i)		B	Mechanical Means (Depth upto 3 m)					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.320	314.67	100.69	L-12
			Mazdoor	day	8.000	300.36	2402.88	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1000.00	6000.00	P&M-49
			c) Overhead charges @ 0.055 on (a+b)				467.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				897.13	
			Cost for 300 cum = a+b+c+d				9868.40	
			Rate per cum = (a+b+c+d)/300				32.89	
						say	33.00	
		Note	Cost of dewatering upto 5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
3.13		(ii)	Ordinary Rock (not requiring blasting)					
		A	Manual Means (Depth upto 3 m)					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.400	314.67	125.87	L-12
			Mazdoor	day	10.000	300.36	3003.60	L-13
			b) Overhead charges @ 0.055 on (a)				172.12	
			c) Contractor's profit @ 0.1 on (a+b)				330.16	
			Cost for 10 cum = a+b+c				3631.75	
			Rate per cum = (a+b+c)/10				363.17	
						say	363.00	
		Note	Cost of dewatering upto 10 per cent of labour cost may be added, where required. Assessment for dewatering shall be made as per site conditions..					
3.13 (ii)		B	Mechanical Means					
			Unit = cum					
			Taking output = 216 cum					
			a) Labour					
			Mate	day	0.240	314.67	75.52	L-12
			Mazdoor	day	6.000	300.36	1802.16	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1000.00	6000.00	P&M-49
			c) Overhead charges @ 0.055 on (a+b)				433.27	
			d) Contractor's profit @ 0.1 on (a+b+c)				831.10	
			Cost for 216 cum = a+b+c+d				9142.05	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate per cum = (a+b+c+d)/216				42.32	
						say	42.00	
		Note	1. Cost of dewatering upto 5 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2. In case of rock, foundation beyond 3 m is not dug and hence not included.					
3.13		(iii)	Hard Rock (requiring blasting)					
		A	Manual Means					
			Unit = cum					
			Taking output = 10 cum					
		a)	Labour					
			i) Mate	day	0.530	314.67	166.78	L-12
			ii) Driller	day	0.840	314.67	264.32	L-06
			iii) Blaster	day	0.400	414.80	165.92	L-03
			iv) Mazdoor	day	12.000	300.36	3604.32	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 jack hammer @ 15 cum per hour	hour	0.67	293.76	196.82	P&M-032
		c)	Material					
			Blasting Material	kg	3.500	120.72	422.52	M-059
			Detonator electric	each	14.000	5.75	80.44	M-058 /100
		d)	Overhead charges @ 0.055 on (a+b+c)				269.56	
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				517.07	
			Cost for 10 cum = a+b+c+d+e				5687.75	
			Rate per cum = (a+b+c+d+e)/10				568.77	
						say	569.00	
		Note	Cost of dewatering @ 10 per cent of labour cost may be added, where required Assessment for dewatering shall be made as per site conditions.					
3.13		(iv)	Hard Rock (blasting prohibited)					
			Unit = cum					
			Taking output = 10 cum					
		A	Mechanical Means					
		a)	Labour					
			Mate	day	0.200	314.67	62.93	L-12
			Mazdoor	day	5.000	300.36	1501.80	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1 cum per hour	hour	10.000	293.76	2937.60	P&M-032
		c)	Overhead charges @ 0.055 on (a+b)				247.63	
		d)	Contractor's profit @ 0.1 on (a+b+c)				475.00	
			Cost for 10 cum = a+b+c+d				5224.96	
			Rate per cum = (a+b+c+d)/10				522.50	
						say	522.00	
		Note	1. Cost of dewatering upto 5 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2. In case of rock, foundation beyond 3 m is not dug and hence not included.					
3.13		(v)	Marshy soil					
			Unit = cum					
			Taking output = 10 cum					
		A	Manual means (upto 3 m depth)					
		a)	Labour					
			Mate/Supervisor	day	0.400	314.67	125.87	L-12
			Mazdoor	day	10.000	300.36	3003.60	L-13

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Machinery					
		Tractor-trolley	hour	2.670	168.75	450.56	P&M-72
		c) Material					
		Selected earth for refilling	cum	5.000	28.58	142.90	M-166
		d) Overhead charges @ 0.055 on (a+b+c)				204.76	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				392.77	
		Cost for 10 cum = a+b+c+d+e				4320.46	
		Rate per cum = (a+b+c+d+e)/ 10				432.05	
					say	<u>432.00</u>	
		Note					
		1. Cost of dewatering @ 30 per cent of (a), may be added, where required Assessment for dewatering shall be made as per site conditions.					
		2. Shoring & strutting 20 per cent of (a), where required may be added					
		3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item (i) to (iv) for ordinary soil					
3.13 (v)	B	Mechanical Means					
		a) Labour					
		i) Mate	day	0.080	314.67	25.17	L-12
		ii) Mazdoor for dressing sides, bottom and backfilling	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.170	1000.00	170.00	P&M-49
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.450	1010.00	454.50	P&M-13
		c) Material					
		Selected earth for refilling	cum	5.000	28.58	142.90	M-166
		d) Overhead charges @ 0.055 on (a+b+c)				76.63	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				146.99	
		Cost for 10 cum = a+b+c+d+e				1616.92	
		Rate per cum = (a+b+c+d+e)/10				161.69	
					say	<u>162.00</u>	
		Note					
		1. Cost of dewatering @ 20 per cent of (a+b) may be added, where required					
		2. Shoring & strutting @ 10 per cent of (a+b), where required may be added					
		3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item (i) to (iv) for ordinary soil					
3.14	305.4.3	Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means					
		Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.					
		Unit = sqm					
		Taking output = 100 sqm					
		a) Labour					
		Mate	day	0.200	314.67	62.93	L-12
		Mazdoor including loading and unloading	day	5.000	300.36	1501.80	L-13
		b) Machinery					
		Tractor-trolley	hour	1.670	168.75	281.81	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				101.56	
		d) Contractor's profit @ 0.1 on (a+b+c)				194.81	
		Cost for 100 sqm = a+b+c+d				2142.92	
		Rate per sqm = (a+b+c+d)/100				21.43	
					say	<u>21.40</u>	
		Note					
		In case material is to be reused at site, transportation cost catered above for disposal shall be deleted.					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.15	305.4.3	Scarifying Existing Bituminous Surface to a depth of 50 mm by Mechanical Means					
		Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres.					
		Unit = sqm					
		Taking output = 100 sqm					
		a) Labour					
		Mate	day	0.010	314.67	3.15	L-12
		Mazdoor	day	0.250	300.36	75.09	L-13
		b) Machinery					
		Tractor with ripper attachment @ 60 cum per hour	hour	0.080	285.12	22.81	P&M-15
		Front end loader 1 cum bucket capacity @ 25 cum per hour	hour	0.200	900.00	180.00	P&M-06
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.230	1010.00	232.30	P&M-13
		c) Overhead charges @ 0.055 on (a+b)				28.23	
		d) Contractor's profit @ 0.1 on (a+b+c)				54.16	
		Cost for 100 sqm = a+b+c+d				595.74	
		Rate per sqm = (a+b+c+d)/100				5.96	
					say	6.00	
3.16	305	Construction of Embankment with Material obtained from Borrowpits					
		Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2.					
		Unit = cum					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor	day	1.000	300.36	300.36	L-13
		b) Machinery					
		Hydraulic Excavator 1 cum bucket capacity @ 60 cum per hour	hour	1.670	1000.00	1670.00	P&M-49
		Tipper 10 tonne capacity	tonne.km	160 x L	2.68	428.80	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				42.88	
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	1500.00	750.00	P&M-42
		Motor grader for grading @ 100 cum per hour	hour	1.000	2450.00	2450.00	P&M-54
		Water tanker 6 KL capacity	hour	4.000	111.24	444.96	P&M-17
		Vibratory roller 8 -10 tonnes @ 100 cum per hour	hour	1.000	600.00	600.00	P&M-16
		c) Material					
		Cost of water	KL	24.000	0.00	0.00	M-1629
		Compensation & Royalty for earth taken from private land	cum	100.000	28.58	2858.00	M-056
		d) Overhead charges @ 0.055 on (a+b+c)				525.67	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				1008.33	
		Cost for 100 cum = a+b+c+d+e				11091.58	
		Rate per cum = (a+b+c+d+e)/100				110.92	
					say	111.00	
		Note					Compensation for earth will vary from place to place and will have to be assessed realistically as per particular ground situation. In case earth is available from Govt. land, compensation for earth will not be required. The position is required to be clearly stated in the cost estimate.
3.17	305	Construction of Embankment with Material Deposited from Roadway Cutting					

Analysis of Rate

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.					
		Unit = cum					
		Taking output = 100 cum					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoor	day	0.500	300.36	150.18	L-13
		b) Machinery					
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	1500.00	750.00	P&M-42
		Motor grader for grading @ 100 cum per hour	hour	1.000	2450.00	2450.00	P&M-54
		Water tanker 6 KL capacity	hour	4.000	111.24	444.96	P&M-17
		Vibratory roller 8-10 tonnes @ 100 cum per hour	hour	1.000	600.00	600.00	P&M-16
		c) Material					
		Cost of water	KL	24.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				242.08	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				464.35	
		Rate for 100 cum = a+b+c+d+e				5107.86	
		Rate per cum = (a+b+c+d+e)/100				51.08	
					say	51.00	
		Note					In case the earth cutting is done by dozer and pushed for filling in the embankment, the input of dozer in the cost of embankment shall be deleted as the same is already provided in the cost of excavation. However, if the earth is dumped by tippers from roadway cutting, the input of dozer for spreading is required to be provided.
3.18	305	Construction of Subgrade and Earthen Shoulders					
		Construction of sub-grade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2					
		Unit = cum					
		Taking output = 100 cum					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor	day	1.000	300.36	300.36	L-13
		b) Machinery					
		Hydraulic excavator 1 cum bucket capacity @ 60 cum per hour	hour	1.670	1000.00	1670.00	P&M-49
		Tipper 10 tonne capacity	tonne.km	175xL	2.68	469.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				46.90	
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	1500.00	750.00	P&M-42
		Motor grader for grading @ 50 cum per hour	hour	2.000	2450.00	4900.00	P&M-54
		Water tanker with 6 km lead	hour	4.000	111.24	444.96	P&M-17
		Vibratory roller 8-10 tonnes @ 80 cum per hour	hour	1.250	600.00	750.00	P&M-16
		c) Material					
		Cost of water	KL	24.000	0.00	0.00	M-1629
		Compensation & Royalty for earth taken from private land	cum	100.000	28.58	2858.00	M-056
		d) Overhead charges @ 0.055 on (a+b+c)				671.10	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				1287.29	
		Cost for 100 cum = a+b+c+d+e				14160.20	
		Rate per cum = (a+b+c+d+e)/100				141.60	
					say	142.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.19	305.3.4		Compacting Original Ground					
		Case-I	Compacting original ground supporting sub-grade					
			Loosening of the ground upto a level of 500 mm below the sub-grade level, watered, graded and compacted in layers to meet requirement of table 300-2 for sub-grade construction.					
			Unit = cum					
			Taking output = 600 cum					
		a)	Labour					
			Mate	day	0.120	314.67	37.76	L-12
			Mazdoor	day	3.000	300.36	901.08	L-13
		b)	Machinery					
			Tractor with ripper attachment	hour	9.000	285.12	2566.08	P&M-15
			Motor grader for grading	hour	6.000	2450.00	14700.00	P&M-54
			Water tanker 6 KL capacity	hour	4.000	111.24	444.96	P&M-17
			Vibratory roller 8-10 tonne @ 80 cum/hour	hour	7.500	600.00	4500.00	P&M-16
		c)	Material					
			Cost of water	KL	24.000	0.00	0.00	M-1629
		d)	Overhead charges @ 0.055 on (a+b+c)				1273.24	
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				2442.31	
			Cost for 600 cum = a+b+c+d+e				26865.44	
			Rate per cum = (a+b+c+d+e)/600				44.78	
						say	45.00	
3.19		Case-II	Compacting original ground supporting embankment					
			Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.					
			Unit = cum					
			Taking output = 600 cum					
		a)	Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	2.000	300.36	600.72	L-13
		b)	Machinery					
			Tractor with ripper attachment	hour	6.000	285.12	1710.72	P&M-15
			Vibratory road roller 8-10 tonne capacity	hour	7.500	600.00	4500.00	P&M-16
			Water tanker 6 KL capacity	hour	4.000	111.24	444.96	P&M-17
		c)	Material					
			Cost of water	KL	24.000	0.00	0.00	M-1629
		d)	Overhead charges @ 0.055 on (a+b+c)				400.49	
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				768.21	
			Cost for 600 cum = (a+b+c+d+e)				8450.27	
			Rate per sqm = (a+b+c+d+e)/600				14.08	
						say	14.00	
3.20	305		Stripping and Storing Top Soil					
			Stripping, storing of top soil by road side at 15 m internal and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth.					
			Unit = cum					
			Taking output = 10 cum					
		a)	Labour					
			Mate	day	0.200	314.67	62.93	L-12
			Mazdoor	day	5.000	300.36	1501.80	L-13
		b)	Machinery					
			Dozer 80 HP @ 100 cum per hour	hour	0.100	1500.00	150.00	P&M-42

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Overhead charges @ 0.055 on (a+b)				94.31	
		d) Contractor's profit @ 0.1 on (a+b+c)				180.90	
		Cost for 10 cum = (a+b+c+d)				1989.95	
		Rate per cum = (a+b+c+d)/10				198.99	
					say	199.00	
3.21		Stripping, Storing and Re-laying Top Soil from Borrow Areas in Agriculture Fields.					
		Stripping of top soil from borrow areas located in agriculture fields, storing at a suitable place, spreading and re-laying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels and satisfaction of the farmer.					
		Unit = cum					
		Taking output = 300 cum					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Dozer, 80 HP	hour	6.000	1500.00	9000.00	P&M-42
		c) Overhead charges @ 0.055 on (a+b)				529.42	
		d) Contractor's profit @ 0.1 on (a+b+c)				1015.53	
		Cost for 300 cum = (a+b+c+d)				11170.85	
		Rate per cum = (a+b+c+d)/300				37.24	
					say	37.00	
3.22	307	Turfing with Sods					
		Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of sods and watering.					
		Unit = sqm					
		Taking output = 100 sqm					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Mazdoor for preparation of ground and fetching of sods	day	3.000	300.36	901.08	L-13
		b) Machinery					
		Water tanker including watering for 3 months	hour	2.000	111.24	222.48	P&M-17
		Tractor-trolley	hour	1.000	168.75	168.75	P&M-72
		c) Material					
		Farm yard manure @ 0.18 cum per 100 sqm at site of work	cum	0.180	571.58	102.88	M-073
		Cost of water	KL	12.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				78.81	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				151.18	
		Cost for 100 sqm = a+b+c+d+e				1662.94	
		Rate per 100 sqm = (a+b+c+d+e)/100				16.63	
					say	17.00	
3.23	308	Seeding and Mulching					
		Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of 0.23 litres per sqm and laying and fixing jute netting, including watering for 3 months all as per clause 308.					
		Unit = sqm					
		Taking output = 240 sqm					
		a) Labour					
		Mate	day	0.400	314.67	125.87	L-12
		Mazdoor	day	10.000	300.36	3003.60	L-13

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Machinery					
		Water tanker 6 KL capacity including watering for 3 months	hour	14.000	111.24	1557.36	P&M-17
		Tractor-trolley	hour	2.400	168.75	405.00	P&M-72
		c) Material					
		Seeds	kg	3.600	23.47	84.49	M-071
		Sludge/Farm yard manure @ 0.18 cum per 100 sqm	cum	0.430	571.58	245.78	M-073
		Bitumen Emulsion	litre	55.200	42.199	2329.38	M-105
		Jute netting, open weave, 2.5 cm square opening	sqm	264.000	30.74	8115.36	M-060
		Cost of water for 3 months	KL	84.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				872.68	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				1673.95	
		Cost for 240 sqm = a+b+c+d+e				18413.47	
		Rate per sqm = (a+b+c+d+e)/240				76.72	
					say	77.00	
3.24	309	Surface Drains in Soil					
		Construction of unlined surface drains of average cross sectional area 0.40 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of 50 metres (average lead 25 metres)					
		Unit = metre					
		Taking output = 10 metres					
		A Mechanical means					
		a) Labour					
		Mate	day	0.010	314.67	3.15	L-12
		Mazdoor for dressing of bed and side of drain	day	0.250	300.36	75.09	L-13
		b) Machinery					
		Hydraulic Excavator 0.3 cum bucket capacity @ 30 metres per hour	hour	0.330	1000.00	330.00	P&M-49
		c) Overhead charges @ 0.055 on (a+b)				22.45	
		d) Contractor's profit @ 0.1 on (a+b+c)				43.07	
		Cost for 10 metres = a+b+c+d				473.76	
		Rate per metre = (a+b+c+d)/10				47.38	
					say	47.00	
3.24		B Manual Means					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Overhead charges @ 0.055 on (a)				34.42	
		c) Contractor's profit @ 0.1 on (a+b)				66.03	
		Cost for 10 metres = a+b+c				726.35	
		Rate per metre = (a+b+c)/10				72.63	
					say	73.00	
		Note					Where lining of drain is provided, quantity shall be worked out based on approved design and drawing and priced on rate of cement concrete of approved grade or stone/brick masonry as the case may be.
3.25	309	Surface Drains in Ordinary Rock					
		Construction of unlined surface drain of average cross sectional area 0.4 sqm in ordinary rock to specified lines, grades, levels and dimensions as per approved design and to the requirement of clause 301 to 309. Excavated material to be used in embankment at site.					
		Unit = metre					
		Taking output = 10 metres					
		A Mechanical Means					

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoor for dressing of bed and side of drain	day	0.500	300.36	150.18	L-13
		b) Machinery					
		Hydraulic Excavator 0.3 cum bucket capacity @ 15 metres per hour	hour	0.670	1000.00	670.00	P&M-49
		c) Overhead charges @ 0.055 on (a+b)				45.46	
		d) Contractor's profit @ 0.1 on (a+b+c)				87.19	
		Cost for 10 metres = a+b+c+d				959.12	
		Rate per metre = (a+b+c+d)/10				95.91	
					say	96.00	
3.25	B	Manual Means					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Mazdoor	day	3.000	300.36	901.08	L-13
		b) Overhead charges @ 0.055 on (a)				51.64	
		c) Contractor's profit @ 0.1 on (a+b)				99.05	
		Cost for 10 metres = a+b+c				1089.52	
		Rate per metre = (a+b+c)/10				108.95	
					say	109.00	
3.26	309	Surface Drains in Hard Rock					
		Rate per metre may be worked out based on quantity of hard rock as per design.					
		For rate of hard rock cutting, refer relevant item in this chapter					
3.27	309	Sub-Surface Drains with Perforated Pipe					
		Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ cement concrete/PVC, closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site.					
		Unit = metre					
		Taking output = 10 metres					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor for excavation and back filling	day	2.000	300.36	600.72	L-13
		c) Material					
		Perforated pipe of cement concrete, internal dia 100 mm	metre	10.000	107.08	1070.80	M-144
		Crushed stone as per table 300-3	cum	2.400	869.86	2087.66	M-021
		d) Overhead charges @ 0.055 on (a+b+c)				207.45	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				397.92	
		Cost for 10 metres = a+b+c+d+e				4377.14	
		Rate per metre = (a+b+c+d+e)/10				437.71	
					say	438.00	
		Note					
		Type of pipe may be modified depending upon provision in design.					
3.28	309	Aggregate Sub-Surface Drains					
		Construction of aggregate sub surface drain 300 mm x 450 mm with aggregates conforming to table 300-4, excavated material to be utilised in roadway.					
		Unit = metre					
		Taking output = 10 metres					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor for excavation and back filling with aggregates	day	1.500	300.36	450.54	L-13
		b) Material					
		Crushed stone as per table 300-3	cum	1.350	869.86	1174.31	M-021
		c) Overhead charges @ 0.055 on (a+b)				89.71	
		d) Contractor's profit @ 0.1 on (a+b+c)				172.09	
		Cost for 10 metres = a+b+c+d				1892.94	
		Rate per metre = (a+b+c+d)/10				189.29	
					say	189.00	
3.29	309	Underground Drain at Edge of Pavement					
		Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab 10 cm in thickness on urban roads.					
		Unit = Running metre					
		Taking output = one metre					
		a) Earthwork in soil	cum	1.500	33.00	49.50	Item No. 3.13
		b) RCC work M-20	cum	0.495	3888.00	1924.56	Item 12.8 (C) RCC
		Rate per metre = (a+b)				1974.06	
		Rates for these items may be taken from chapters on earth work and substructures respectively.			say	1974.00	
3.30	310	Preparation and Surface Treatment of Formation.					
		Preparation and surface treatment of formation by removing mud and slurry, watering to the extent needed to maintain the desired moisture content, trimming to the required line, grade, profile and rolling with 8-10 tonne smooth wheeled roller, complete as per clause 310.					
		Unit = sqm					
		Taking output = 3500sqm					
		a) Labour					
		Mate	day	0.280	314.67	88.11	L-12
		Mazdoor	day	6.000	300.36	1802.16	L-13
		Mazdoor skilled	day	1.000	414.80	414.80	L-15
		b) Machinery					
		Smooth 3 wheeled steel roller 8-10 tonnes	hour	3.000	803.00	2409.00	P&M-011
		Water tanker 6 KL, one trip per hour	hour	3.000	111.24	333.72	P&M-17
		c) Material					
		Cost of water	KL	18.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				277.63	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				532.54	
		Cost for 3500 sqm = a+b+c+d+e				5857.96	
		Rate per sqm = (a+b+c+d+e)/3500				1.67	
					say	2.00	
3.31	313	Construction of Rock fill Embankment					
		Construction of rock fill embankment with broken hard rock fragments of size not exceeding 300 mm laid in layers not exceeding 500 mm thick including filling of surface voids with stone spalls, blinding top layer with granular material, rolled with vibratory road roller, all complete as per clause 313.					
		Unit = cum					
		Taking output = 100 cum					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	1.500	300.36	450.54	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	1500.00	750.00	P&M-42
			Vibratory road roller 8-10 tonnes @ 100 cum per hour	hour	1.000	600.00	600.00	P&M-16
			Water tanker 6 KL, one trip per hour	hour	2.000	111.24	222.48	P&M-17
			c) Material					
			Cost of water	KL	12.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				111.96	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				214.76	
			Cost for 100 cum = a+b+c+d+e				2362.32	
			Rate per cum = (a+b+c+d+e)/100				23.62	
						say	24.00	
		Note	It is assumed that rock is available locally at site from roadway cutting. In case, portion of the rock requires breaking to acceptable size of 300 mm, breaking charges will have to be added.					
			EARTH WORK ON HILL ROAD					
3.32	301		Excavation in Hill Area in Soil by Mechanical Means					
			Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres.					
			Unit = cum					
			Taking output = 260 cum					
			a) Labour					
			Mate	day	0.240	314.67	75.52	L-12
			Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	300.36	1802.16	L-13
			b) Machinery					
			Dozer 80 HP (D-80 A 12)@ 43.28 cum per hour	hour	6.000	1500.00	9000.00	P&M-42
			Front end loader	hour	6.000	900.00	5400.00	P&M-06
			Tipper 5.5cum capacity, 4 trips per hour.	hour	12.000	1010.00	12120.00	P&M-13
			c) Overhead charges @ 0.055 on (a+b)				1561.87	
			d) Contractor's profit @ 0.1 on (a+b+c)				2995.96	
			Cost for 260 cum = a+b+c+d				32955.51	
			Rate per cum = (a+b+c+d)/260				126.75	
						say	127.00	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth shall be disposed off on the valley side.					
3.33	301		Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting.					
			Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres.					
			Unit = cum					
			Taking output = 170 cum					
			a) Labour					
			Mate	day	0.320	314.67	100.69	L-12
			Mazdoor	day	8.000	300.36	2402.88	L-13
			b) Machinery					
			Dozer 80 HP (D-80 A 12)@ 28.32 cum per hour	hour	6.000	1500.00	9000.00	P&M-42
			Front end loader	hour	7.000	900.00	6300.00	P&M-06

Analysis of Rate

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	1010.00	7070.00	P&M-13
		c) Overhead charges @ 0.055 on (a+b)				1368.05	
		d) Contractor's profit @ 0.1 on (a+b+c)				2624.16	
		Cost for 170 cum = a+b+c+d				28865.78	
		Rate per cum = (a+b+c+d)/170				169.80	
					say	170.00	
		Note In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth can be disposed off on the valley side.					
3.34	301	Excavation in Hilly Areas in Hard Rock Requiring Blasting					
		Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.					
		Unit = cum					
		Taking output = 170 cum					
		a) Labour					
		Mate	day	0.490	314.67	154.19	L-12
		Mazdoor	day	10.000	300.36	3003.60	L-13
		Driller	day	2.000	314.67	629.34	L-06
		Blaster	day	0.250	414.80	103.70	L-03
		b) Machinery					
		Dozer 80 HP (D-80 A 12)@ 28.32 cum per hour	hour	6.000	1500.00	9000.00	P&M-42
		Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	293.76	1468.80	P&M-032
		Front end loader	hour	7.000	900.00	6300.00	P&M-06
		Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	1010.00	7070.00	P&M-13
		c) Materials					
		Gelatine 80 per cent	kg	35.000	120.72	4225.20	M-059
		Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	140.000	5.75	804.41	M-058 /100
		d) Overhead charges @ 0.055 on (a+b+c)				1801.76	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				3456.10	
		Cost for 170 cum = a+b+c+d+e				38017.10	
		Rate per cum = (a+b+c+d+e)/170				223.63	
					say	224.00	
		Note In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth can be disposed off on the valley side.					
		In case of hill roads, the altitude effect comes into play. The output of men and machines decreases progressively after 2100 m elevation leading to increase in cost . High altitude effect has been explained in the basic approach.					
3.35		Work in Urban Roads					
		The cost of earth work in urban roads inhabited area will be comparatively higher due to following reasons:					
		a) There is mixed traffic on urban roads like slow moving hand and animal driven carts, rickshaws, cycles, two/ three wheeler apart from the usual vehicular traffic resulting into traffic jams. This causes loss of working time which may be in the range of 10 -15 per cent					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) There is considerable disruption of traffic adversely affecting the efficiency of the working parties including machines due to congestion caused by pedestrian traffic, local road side vendors, parking of vehicles by the road side, encroachments by the shopkeepers and local shops who make use of the berms of the road in front of these shops and unauthorised conversion of road berms into mini local market. The output of manpower and machines is substantially reduced due to factors mentioned above.					
		c) Cost of living in urban areas is comparatively more resulting into higher wages.					
		d) At times, work is executed during night time due to heavy traffic during day time. This involves extra expenditure by way of making arrangement for lighting and special transport for working parties due to odd hour.					
		In the light of above, the authorities engaged in preparing the cost estimates may exercise their judgment and cater for the additional cost to the extent of 2 to 3 per cent, keeping in view the severity of factors mentioned above. Supporting details for the extra cost based on the actual conditions in specific cases will have to give in justification.					
3.36	Suggestive	Embankment Construction with Flyash/Pond ash available from coal or lignite burning Thermal Plants as waste material.					
		Construction of embankment with Flyash conforming to table 1 of IRC: SP: 58 - 2001 obtained from coal or lignite burning thermal power stations as waste material, spread and compacted in layer of 200mm thickness each at OMC, all as specified in IRC: SP: 58-2001 and as per approved plans.					
		Unit = cum					
		Taking output = 360 cum					
		a) Labour					
		Mate	day	0.160	314.67	50.35	L-12
		Mazdoor	day	4.000	300.36	1201.44	L-13
		b) Machinery					
		Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum/hour	hour	6.000	1000.00	6000.00	P&M-49
		Tipper 10T capacity flyash 360 x 1.2 = 432 tonnes	tonne.km	432 x L	2.68	1157.76	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage for loading and unloading				115.78	
		Dozer 80 HP for spreading @ 200 cum/hour	hour	1.800	1500.00	2700.00	P&M-42
		Motor Grader for grading @ 100 cum/hour	hour	3.600	2450.00	8820.00	P&M-54
		Water tanker 6 KL capacity	hour	12.000	111.24	1334.88	P&M-17
		Vibratory Roller 8-10 tonne @ 100 cum/hour	hour	3.600	600.00	2160.00	P&M-16
		c) Overhead charges @ 0.055 on (a+b)				1294.71	
		d) Contractor's profit @ 0.1 on (a+b+c)				2483.49	
		Cost for 360 cum = a+b+c+d				27318.41	
		Rate per cum = (a+b+c+d)/360				75.88	
					say	76.00	
		Note					
		1.As flyash is available free of cost as waste material from Thermal Plants, cost of material has not been added.					
		2.The earth cover on sides and intermediate layers of earth sandwiching the flyash have not been included in this analysis. The same are required to be provided as per approved design and priced separately as embankment construction.					

CHAPTER - 4
SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.1	401		Granular Sub-Base with Close Graded Material (Table:- 400-1)					
		A	Plant Mix Method					
			Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401					
			Unit = cum					
			Taking output = 225 cum (450 tonne)					
			a) Labour					
			Mate	day	0.400	314.67	125.87	L-12
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			Mazdoor	day	8.000	300.36	2402.88	L-13
			b) Machinery					
			Wet mix plant @ 75 tonne capacity per hour	hour	6.000	2807.00	16842.00	P&M-107
			Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
			Water tanker 6 KL capacity 5 km lead with one tripper hour	hour	4.500	111.24	500.58	P&M-17
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 10 tonne	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover loading and unloading				120.60	
			Motor Grader 110 HP	hour	6.000	2450.00	14700.00	P&M-54
			Vibratory roller 8-10 t	hour	6.000	600.00	3600.00	P&M-16
			c) Material					
			Close graded Granular sub-base Material as per table 400-1					
			For Grading-I Material					
			53 mm to 9.5 mm @ 50 per cent	cum	144.000	988.89	142400.16	M-022
			9.5 mm to 2.36 mm @ 20 per cent	cum	57.000	883.21	50342.97	M-023
			2.36 mm below @ 30 per cent	cum	86.400	648.52	56032.13	M-086
			Cost of water	KL	27.000	0.00	0.00	M-1629
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	100.800	1045.73	105409.58	M-082
			9.5 mm to 2.36 mm @ 25 per cent	cum	72.000	883.21	63591.12	M-023
			2.36 mm below @ 40 per cent	cum	115.200	648.52	74709.50	M-086
			Cost of water	KL	27.000	0.00	0.00	M-1629
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	100.800	936.27	94376.02	M-083
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	36.000	725.20	26107.20	M-084
			2.36 mm below @ 52.5 per cent	cum	151.200	648.52	98056.22	M-086
			Cost of water	KL	27.000	0.00	0.00	M-1629
4.1A		(i)	Rate per cum for grading-I Material					
			d) Overhead charges @ 0.055 on (a+b+c)				17068.85	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				32741.16	
			Cost for 225 cum = a+b+c+d+e				360152.80	
			Rate per cum = (a+b+c+d+e)/225				1600.68	
						say	1601.00	
4.1A		(ii)	Rate per cum for grading-II Material					
			d) Overhead charges @ 0.055 on (a+b+c)				16790.28	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				32206.80	
			Cost for 225 cum = a+b+c+d+e				354274.81	
			Rate per cum = (a+b+c+d+e)/225				1574.55	
						say	1575.00	
4.1A		(iii)	Rate per cum for grading-III Material					
			d) Overhead charges @ 0.055 on (a+b+c)				15405.88	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				29551.29	
			Cost for 225 cum = a+b+c+d+e				325064.14	
			Rate per cum = (a+b+c+d+e)/225				1444.73	
						say	1445.00	

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	Any one of the grading for material may be adopted as per design					
4.1		B	By Mix in Place Method					
			Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401					
			Unit = cum					
			Taking output = 300 cum					
		a)	Labour					
			Mate	day	0.480	314.67	151.04	L-12
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			Mazdoor unskilled	day	10.000	300.36	3003.60	L-13
		b)	Machinery					
			Motor Grader 110 HP @ 50 cum	hour	6.000	2450.00	14700.00	P&M-54
			Vibratory roller 8 -10 tonne	hour	6.000	600.00	3600.00	P&M-16
			Tractor - Rotavator	hour	12.000	227.88	2734.56	P&M-14
			Water tanker 6 KL capacity	hour	3.000	111.24	333.72	P&M-17
		c)	Material					
			Close graded Granular sub-base Material as per table 400-1					
			For Grading-I Material					
			53 mm to 9.5 mm @ 50 per cent	cum	192.000	988.89	189866.88	M-022
			9.5 mm to 2.36 mm @ 20 per cent	cum	76.000	883.21	67123.96	M-023
			2.36 mm below @ 30 per cent	cum	115.200	648.52	74709.50	M-086
			Cost of water	KL	18.000	0.00	0.00	M-1629
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	134.400	1045.73	140546.11	M-082
			9.5 mm to 2.36 mm @ 25 per cent	cum	96.000	883.21	84788.16	M-023
			2.36 mm below @ 40 per cent	cum	153.600	648.52	99612.67	M-086
			Cost of water	KL	18.000	0.00	0.00	M-1629
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	134.400	936.27	125834.69	M-083
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	48.000	725.20	34809.60	M-084
			2.36 mm below @ 52.5 per cent	cum	201.600	648.52	130741.63	M-086
			Cost of water	KL	18.000	0.00	0.00	M-1629
4.1B		(i)	Rate per cum for grading-I Material					
		d)	Overhead charges @ 0.055 on (a+b+c)				19637.91	
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				37669.08	
			Cost for 300 cum = a+b+c+d+e				414359.85	
			Rate per cum = (a+b+c+d+e)/300				1381.20	
						say	1381.00	
4.1B		(ii)	Rate per cum for grading-II Material					
		d)	Overhead charges @ 0.055 on (a+b+c)				19266.47	
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				36956.59	
			Cost for 300 cum = a+b+c+d+e				406522.53	
			Rate per cum = (a+b+c+d+e)/300				1355.08	
						say	1355.00	
4.1B		(iii)	Rate per cum for grading-III Material					
		d)	Overhead charges @ 0.055 on (a+b+c)				17420.61	
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				33415.91	
			Cost for 300 cum = a+b+c+d+e				367574.96	
			Rate per cum = (a+b+c+d+e)/300				1225.25	
						say	1225.00	
		Note	Any one of the grading for material may be adopted as per design					
4.2	401		Granular Sub-Base with Coarse Graded Material (Table:- 400- 2)					
			Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Unit = cum					
		Taking output = 300 cum					
		a) Labour					
		Mate	day	0.400	314.67	125.87	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	8.000	300.36	2402.88	L-13
		b) Machinery					
		Mortar Grader 110 HP @ 50 cum per hour	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8 -10 tonne	hour	6.000	600.00	3600.00	P&M-16
		Water tanker 6 KL capacity	hour	3.000	111.24	333.72	P&M-17
		c) Material					
		For coarse graded Granular sub-base Materials per table 400-2					
		For grading-I Material					
		53 mm to 26.5 mm @ 35 per cent	cum	134.400	900.54	121032.58	M-090
		26.5 mm to 4.75 mm @ 45 per cent	cum	172.800	965.27	166798.66	M-088
		2.36 mm below @ 20 per cent (Coarse Sand)	cum	76.800	498.00	38246.40	M-024
		Cost of water	KL	18.000	0.00	0.00	M-1629
		OR					
		For Grading-II Material					
		26.5 mm to 4.75 mm @ 75 per cent	cum	288.000	965.27	277997.76	M-088
		2.36 mm below @ 25 per cent	cum	96.000	498.00	47808.00	M-024
		Cost of water	KL	18.000	0.00	0.00	M-1629
		OR					
		For Grading-III Material					
		9.5 mm to 4.75 mm @ 66 per cent	cum	255.000	999.00	254745.00	M-026
		2.36 mm below @ 34 per cent	cum	129.000	498.00	64242.00	M-024
		Cost of water	KL	18.000	0.00	0.00	M-1629
4.2	(i)	Rate per cum for grading-I Material					
		d) Overhead charges @ 0.055 on (a+b+c)				19143.83	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				36721.35	
		Cost for 300 cum = a+b+c+d+e				403934.89	
		Rate per cum = (a+b+c+d+e)/300				1346.45	
					say	<u>1346.00</u>	
4.2	(ii)	Rate per cum for grading-II Material					
		d) Overhead charges @ 0.055 on (a+b+c)				19128.88	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				36692.67	
		Cost for 300 cum = a+b+c+d+e				403619.38	
		Rate per cum = (a+b+c+d+e)/300				1345.40	
					say	<u>1345.00</u>	
4.2	(iii)	Rate per cum for grading-III Material					
		d) Overhead charges @ 0.055 on (a+b+c)				18753.85	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				35973.29	
		Cost for 300 cum = a+b+c+d+e				395706.21	
		Rate per cum = (a+b+c+d+e)/300				1319.02	
					say	<u>1319.00</u>	
	Note	Any one of the grading for material may be adopted as per design					
4.3	402	Lime Stabilisation for Improving Sub-grade					
		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 3 per cent slaked lime having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade					
		Unit = cum					
		Taking output = 300 cum (525 tonne)					
	A	By Mechanical Means					
		a) Labour					
		Mate	day	0.360	314.67	113.28	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	414.80	414.80	L-15
		Mazdoor for spraying lime	day	8.000	300.36	2402.88	L-13
		b) Machinery					
		Tractor with ripper and rotavator attachments @ 60 cum per hour for ripping and 25 cum per hour for mixing	hour	12.000	285.12	3421.44	P&M-15

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8 - 10 tonne capacity	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Water tanker 6 KL capacity	hour	12.000	111.24	1334.88	P&M-17
		c) Material					
		Lime at site	tonne	15.750	4703.60	74081.70	M-293
		Cost of water	KL	72.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				5434.49	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				10424.35	
		Cost for 300 cum = a+b+c+d+e				114667.82	
		Rate per cum = (a+b+c+d+e)/300				382.23	
					say	382.00	
		Note					* Though vibratory roller is required only for 3 hours as per norms, but the same has to be available at site for 6 hours as other machines for spreading and mixing will take 6 hours. The usage rates of roller have been multiplied with a factor of 0.65.
4.3		B By Manual Means					
		Unit = cum					
		Taking output = 150 cum (263 tonnes)					
		a) Labour					
		Mate	day	1.440	314.67	453.12	L-12
		Mazdoor skilled	day	1.000	414.80	414.80	L-15
		Mazdoor	day	35.000	300.36	10512.60	L-13
		b) Machinery					
		Vibratory roller 8 - 10 tonne @ 60 cum per hour	hour	2.500	600.00	1500.00	P&M-16
		Water tanker 6 KL capacity	hour	6.000	111.24	667.44	P&M-17
		c) Material					
		Lime at site	tonne	8.000	4703.60	37628.80	M-293
		Cost of water	KL	36.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				2814.72	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				5399.15	
		Cost for 150 cum = a+b+c+d+e				59390.64	
		Rate per cum = (a+b+c+d+e)/150				395.94	
					say	396.00	
4.4	402	Lime Treated Soil for Sub- Base					
		Providing, laying and spreading soil on a prepared sub grade, pulverising, mixing the spread soil in place with rotavator with 3 per cent slaked lime with minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98 per cent of the max dry density to form a layer of sub base.					
		Unit = cum					
		Taking output = 300 cum (525 tonnes)					
		a) Labour					
		Mate	day	0.480	314.67	151.04	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	10.000	300.36	3003.60	L-13
		b) Machinery					
		Excavator 0.90 cum bucket capacity	hour	6.000	1000.00	6000.00	P&M-49
		Tipper for carriage of soil	tonne.km	525 x L	2.68	1407.00	Lead = 1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				140.70	
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8 - 10 tonne	hour	6.000	600.00	3600.00	P&M-16
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	227.88	2734.56	P&M-14
		Water tanker 6 KL capacity	hour	12.000	111.24	1334.88	P&M-17
		c) Material					
		Lime at site	tonne	15.750	4703.60	74081.70	M-293
		Cost of water	KL	72.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				5939.07	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				11392.22	
		Cost for 300 cum = a+b+c+d+e				125314.37	
		Rate per cum = (a+b+c+d+e)/300				417.71	
					say	418.00	
4.5	403	Cement Treated Soil Sub Base/ Base					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Providing, laying and spreading soil on a prepared sub grade, pulverising, adding the designed quantity of cement to the spread soil, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base.					
		Unit = cum					
		Taking output = 300 cum (525 tonnes)					
		For 4 per cent quantity of cement by weight of soil					
		a) Labour					
		Mate	day	0.480	314.67	151.04	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	10.000	300.36	3003.60	L-13
		b) Machinery					
		Excavator 0.90 cum bucket capacity	hour	6.000	1000.00	6000.00	P&M-49
		Tipper for carriage of soil	tonne.km	525 x L	2.68	1407.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				140.70	
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8 - 10 tonne	hour	6.000	600.00	3600.00	P&M-16
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	227.88	2734.56	P&M-14
		Water tanker 6 KL capacity	hour	12.000	111.24	1334.88	P&M-17
		c) Material					
		Cement at site (@ 4 per cent of 525 tonne)	tonne	21.000	5000.00	105000.00	M-015
		Cost of water	KL	72.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				7639.58	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				14654.10	
		Cost for 300 cum = a+b+c+d+e				161195.05	
		Rate per cum= (a+b+c+d+e)/300				537.32	
					say	537.00	
4.6	403	Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4in Sub base/ Base					
		Providing, laying and spreading Material on a prepared sub grade, adding the designed quantity of cement to the spread Material, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base.					
		Unit = cum					
		Taking output = 300 cum (600 tonnes)					
		Quantity of cement assumed as 4 per cent of quantity of crushed rock by weight.					
		a) Labour					
		Mate	day	0.480	314.67	151.04	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	10.000	300.36	3003.60	L-13
		b) Machinery					
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8 - 10 tonne	hour	6.000	600.00	3600.00	P&M-16
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	227.88	2734.56	P&M-14
		Water tanker 6 KL capacity	hour	10.000	111.24	1112.40	P&M-17
		c) Material					
		Cement at site @ 4 per cent by weight of crushed aggregate (600 tonne)	tonne	24.000	5000.00	120000.00	M-015
		Grading of material for sub-base course					
		37.5 mm to 9.5 mm @ 55 per cent	cum	211.200	1065.54	225042.05	M-081
		9.5 mm to 4.75 mm @ 20 per cent	cum	76.800	999.00	76723.20	M-026
		4.75 mm to 75 micron @ 25 per cent	cum	96.000	704.62	67643.52	M-085
		Cost of water	KL	60.000	0.00	0.00	M-1629
		or					
		Grading of material for Base course					
		37.5 mm to 9.5 mm @ 32.5 per cent	cum	124.800	954.81	119160.29	M-089
		9.5 mm to 4.75 mm @ 5 per cent	cum	19.200	999.00	19180.80	M-026
		4.75 mm to 75 micron @ 62.5 per cent	cum	240.000	518.67	124480.80	M-087
		Cost of water	KL	60.000	0.00	0.00	M-1629
4.6	(i)	For Sub-Base course					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) Overhead charges @ 0.055 on (a+b+c)				28354.70	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				54389.47	
		Cost for 300 cum = a+b+c+d+e				598284.13	
		Rate per cum = (a+b+c+d+e)/300				1994.28	
					say	1994.00	
4.6		(ii) For Base course					
		d) Overhead charges @ 0.055 on (a+b+c)				22492.42	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				43144.55	
		Cost for 300 cum = a+b+c+d+e				474590.06	
		Rate per cum = (a+b+c+d+e)/300				1581.97	
					say	1582.00	
		Note Quantities of aggregates provided under 'c' above are uncompacted quantities.					
4.7	404.3.1	Making 50 mm x 50 mm Furrows					
		Making 50 mm x 50 mm furrows, 25mm/ 50mm deep, 45° C to the center line of the road and at one metre interval in the existing thin bituminous wearing coarse including sweeping and disposal of excavated material within 1000 metres lead					
		Unit = sqm					
		Taking output = 30 m x 7 m = 210 sqm					
		(i) 25mm deep furrow cutting					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Tractor-trolley	hour	0.200	168.75	33.75	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				36.28	
		d) Contractor's profit @ 0.1 on (a+b+c)				69.59	
		Cost for 210 sqm = a+b+c+d				765.52	
		Rate per sqm = (a+b+c+d)/210				3.65	
					say	3.60	
		(ii) 50mm deep furrow cutting					
		a) Labour					
		Mate	day	0.160	314.67	50.35	L-12
		Mazdoor	day	4.000	300.36	1201.44	L-13
		b) Machinery					
		Tractor-trolley	hour	0.400	168.75	67.50	P&M-72
		c) Overhead charges @ 0.055 on (a+b)				72.56	
		d) Contractor's profit @ 0.1 on (a+b+c)				139.18	
		Cost for 210 sqm = a+b+c+d				1531.03	
		Rate per sqm = (a+b+c+d)/210				7.29	
					say	7.30	
4.8	404.3.2	Inverted Choke					
		Construction of inverted choke by providing, laying, spreading and compacting screening B type/ coarse sand of specified grade in uniform layer on a prepared surface with motor grader and compacting with power roller etc					
		Unit = cum					
		Taking output = 600 cum					
		a) Labour					
		Mate	day	0.920	314.67	289.50	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	21.000	300.36	6307.56	L-13
		b) Machinery					
		Motor Grader 110 HP	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8-10 tonnes @ 60 cum per hour	hour	6.000	600.00	3600.00	P&M-16
		Water tanker 6 KL capacity	hour	18.000	111.24	2002.32	P&M-17
		c) Material					
		Screening type 'B' or coarse sand	cum	720.000	252.20	181584.00	M-001
		Cost of water	KL	108.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				11512.21	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				22082.52	
		Cost for 600 cum = a+b+c+d+e				242907.71	
		Rate per cum = (a+b+c+d+e)/600				404.85	
					say	405.00	

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9	404		Water Bound Macadam					
			Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with 3 wheeled steel/ vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.					
		A	By Manual Means					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	10.080	314.67	3171.87	L-12
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			Mazdoor	day	250.000	300.36	75090.00	L-13
			b) Machinery					
			Vibratory roller 8 - 10 tonne @ 60cum per hour	hour	6.000	600.00	3600.00	P&M-16
			or					
			Smooth 3 wheeled steel roller @ 30cum/hour	hour	12.000			
			Water tanker 6 KL capacity	hour	24.000	111.24	2669.76	P&M-17
			c) Material (Refer table 400 - 7, 8 & 9)					
4.9A		(i)	Grading-I					
			Aggregate					
			Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	721.25	314176.50	M-009
			Stone Screening					
			Type A 13.2 mm for grading-I @ 0.27 cum per 10 sqm	cum	97.200	865.34	84111.05	M-033
			OR					
			Crushable type such as Moorum or Gravel for grading-I @ 0.30 cum per 10 sqm	cum	108.000	143.66	15515.28	M-003
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	143.66	4137.41	M-003
			Cost of water	KL	144.000	0.00	0.00	M-1629
4.9A (i)		(a)	Using Screening Crushable type such as Moorum or Gravel					
			d) Overhead charges @ 0.055 on (a+b+c)				22827.92	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				43788.09	
			Cost for 360 cum = a+b+c+d+e				481669.02	
			Rate per cum = (a+b+c+d+e)/360				1337.97	
						say	1338.00	
			OR					
4.9A (i)		(b)	Using Screening Type-A (13.2mm agg.) with binding material					
			d) Overhead charges @ 0.055 on (a+b+c)				26828.24	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				51461.44	
			Cost for 360 cum = a+b+c+d+e				566075.87	
			Rate per cum = (a+b+c+d+e)/360				1572.43	
						say	1572.00	
4.9A		(ii)	Grading-II					
			Aggregate					
			Grading-II 63 mm to 45 mm /Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	780.36	339924.82	M-008 / M-007
			Stone Screening					
			Type A 13.2 mm for grading-II @ 0.12 cum per 10 sqm	cum	57.600	865.34	49843.58	M-033
			OR					
			Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	143.66	15169.06	M-003
			OR					
			Type B11.2 mm for grading-III @ 0.20 cum per 10 sqm	cum	96.010	755.58	72543.24	M-032

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	143.66	4137.41	M-003
		Cost of water	KL	144.000	0.00	0.00	M-1629
4.9A (ii)	(a)	Using Screening Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 0.055 on (a+b+c)				24225.03	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				46468.01	
		Cost for 360 cum = a+b+c+d+e				511148.15	
		Rate per cum = (a+b+c+d+e)/360				1419.86	
					say	1420.00	
		OR					
4.9A (ii)	(b)	Using Screening Type-A (13.2mm agg.) with binding material					
		d) Overhead charges @ 0.055 on (a+b+c)				26359.69	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				50562.67	
		Cost for 360 cum = a+b+c+d+e				556189.40	
		Rate per cum = (a+b+c+d+e)/360				1544.97	
					say	1545.00	
4.9A (ii)	(c)	Using Screening Type-B (11.2mm agg.) with binding material					
		d) Overhead charges @ 0.055 on (a+b+c)				27608.17	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				52957.49	
		Cost for 360 cum = a+b+c+d+e				582532.35	
		Rate per cum = (a+b+c+d+e)/360				1618.15	
					say	1618.00	
4.9A	(iii)	Grading-III					
		Aggregate					
		Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	798.65	347891.94	M-007
		Stone Screening					
		Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	755.58	65282.11	M-032
		OR					
		Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	143.66	15169.06	M-003
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	143.66	4137.41	M-003
		Cost of water	KL	144.000	0.00	0.00	M-1629
4.9A (iii)	(a)	Using Screening Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 0.055 on (a+b+c)				24663.22	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				47308.55	
		Cost for 360 cum = a+b+c+d+e				520394.00	
		Rate per cum = (a+b+c+d+e)/360				1445.54	
					say	1446.00	
		OR					
4.9A (iii)	(b)	Using Screening Type-B (11.2mm agg.)					
		d) Overhead charges @ 0.055 on (a+b+c)				27647.00	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				53031.97	
		Cost for 360 cum = a+b+c+d+e				583351.66	
		Rate per cum = (a+b+c+d+e)/360				1620.42	
					say	1620.00	
		(Anyone of the aggregate grading, screening and binding material may be used as per design)					
4.9	B	By Mechanical Means:					
		Unit = cum					
		Taking output = 360 cum					
		a) Labour					
		Mate	day	0.680	314.67	213.98	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	15.000	300.36	4505.40	L-13
		b) Machinery					
		Motor grader 110 HP @ 50cum/hr. for spreading	hour	7.200	2450.00	17640.00	P&M-54

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Vibratory roller 8-10 tonnes @ 60cum/hr.	hour	6.000	600.00	3600.00	P&M-16
			or					
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
			Water tanker 6 KL capacity	hour	24.000	111.24	2669.76	P&M-17
			c) Material (Refer table 400 - 7, 8 & 9)					
4.9B		(i)	Grading-I					
			Aggregate					
			Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	721.25	314176.50	M-009
			Stone Screening					
			Type A 13.2 mm for grading-I @ 0.27 cum per 10 sqm	cum	97.200	865.34	84111.05	M-033
			OR					
			Crushable type such as Moorum or Gravel for grading-I @ 0.30 cum per 10 sqm	cum	108.000	143.66	15515.28	M-003
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	143.66	4137.41	M-003
			Cost of water	KL	144.000	0.00	0.00	M-1629

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9B (i)	(a)	Using Screening Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 0.055 on (a+b+c)				19753.28	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				37890.38	
		Cost for 360 cum = a+b+c+d+e				416794.17	
		Rate per cum = (a+b+c+d+e)/360				1157.76	
					say	<u>1158.00</u>	
		OR					
4.9B (i)	(b)	Using Screening Type-A (13.2mm agg.) with binding material					
		d) Overhead charges @ 0.055 on (a+b+c)				23753.60	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				45563.73	
		Cost for 360 cum = a+b+c+d+e				501201.02	
		Rate per cum = (a+b+c+d+e)/360				1392.23	
					say	<u>1392.00</u>	
4.9B	(ii)	Grading-II					
		Aggregate					
		Grading-II 63 mm to 45 mm /Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	780.36	339924.82	M-008 / M-007
		Stone Screening					
		Type A 13.2 mm for grading-II@ 0.12 cum per 10 sqm	cum	57.600	865.34	49843.58	M-033
		OR					
		Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	143.66	15169.06	M-003
		OR					
		Type B 11.2 mm for grading-III @ 0.20 cum per 10 sqm	cum	96.010	755.58	72543.24	M-032
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	143.66	4137.41	M-003
		Cost of water	KL	144.000	0.00	0.00	M-1629
4.9B (ii)	(a)	Using Screening Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 0.055 on (a+b+c)				21150.39	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				40570.30	
		Cost for 360 cum = a+b+c+d+e				446273.31	
		Rate per cum = (a+b+c+d+e)/360				1239.65	
					say	<u>1240.00</u>	
		OR					
4.9B (ii)	(b)	Using Screening Type-A (13.2mm agg.) with binding material					
		d) Overhead charges @ 0.055 on (a+b+c)				23285.05	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				44664.96	
		Cost for 360 cum = a+b+c+d+e				491314.55	
		Rate per cum = (a+b+c+d+e)/360				1364.76	
					say	<u>1365.00</u>	
4.9B (ii)	(c)	Using Screening Type-B (11.2mm agg.) with binding material					
		d) Overhead charges @ 0.055 on (a+b+c)				24533.53	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				47059.77	
		Cost for 360 cum = a+b+c+d+e				517657.50	
		Rate per cum = (a+b+c+d+e)/360				1437.94	
					say	<u>1438.00</u>	
4.9B	(iii)	Grading-III					
		Aggregate					
		Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	798.65	347891.94	M-007
		Stone Screening					
		Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	755.58	65282.11	M-032
		OR					
		Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	143.66	15169.06	M-003
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	143.66	4137.41	M-003

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cost of water	KL	144.000	0.00	0.00	M-1629
4.9B (iii)	(a)	Using Screening Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 0.055 on (a+b+c)				21588.59	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				41410.83	
		Cost for 360 cum = a+b+c+d+e				455519.15	
		Rate per cum = (a+b+c+d+e)/360				1265.33	
					say	<u>1265.00</u>	
		OR					
4.9B (iii)	(b)	Using Screening Type-B (11.2mm agg.) with binding material					
		d) Overhead charges @ 0.055 on (a+b+c)				24572.36	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				47134.26	
		Cost for 360 cum = a+b+c+d+e				518476.81	
		Rate per cum = (a+b+c+d+e)/360				1440.21	
					say	<u>1440.00</u>	
		Note As three wheeled smooth rollers are also very commonly used, the same has been provided as an alternative.					
4.10	405	Crushed Cement Concrete Sub-base / Base					
		Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L km., laying and compacting the same as sub base/ base course, constructed as WBM to clause 404 except the use of screening or binding Material.					
		Unit = cum					
		Taking output = 360 cum					
		a) Labour					
		Mate	day	4.160	314.67	1309.03	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor for crushing broken cement concrete pavement/slabs into aggregate	day	102.000	300.36	30636.72	L-13
		b) Machinery					
		Motor Grader, 110 HP @ 50 cum/hr.	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8 - 10 tonne @ 60 cum per hour	hour	6.000	600.00	3600.00	P&M-16
		or					
		Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	720 x L	2.68	1929.60	Lead = 1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				192.96	
		Water tanker 6 KL capacity with 5 km lead @ 1 trip per hour	hour	12.000	111.24	1334.88	P&M-17
		c) Material					
		Material available from dismantled concrete slab after crushing / breaking and only carriage is required to be provided					
		Cost of water	KL	72.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				3296.30	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				6322.91	
		Cost for 360 cum = a+b+c+d+e				69552.00	
		Rate per cum = (a+b+c+d+e)/360				193.20	
					say	<u>193.00</u>	
		With Vibratory Roller				<u>193.00</u>	
		With Smooth 3 wheeled Steel Roller				<u>213.00</u>	
		Note 1. It is assumed that dismantling of concrete slab/pavement has been considered separately. Hence same is not added in this analysis. Only labour for crushing the dismantled slab into aggregate has been added. Carriage from stock pile to work site has been provided with a lead of L km.					
		2. In case of breaking of slabs is done locally without involvement of transportation, the provision of tipper, front end loader and loading/unloading charges may be deleted.					
		3. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative.					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.11	405.2	Penetration Coat Over Top Layer of Crushed Cement Concrete Base					
		Spraying of bitumen over cleaned dry surface of crushed cement concrete base at the rate of 25 kg per 10 sqm by a bitumen pressure distributor, spreading of key aggregates at the rate of 0.13 cum per 10 sqm by a mechanical gritter and rolling the surface as per clause 506.3.8					
		Unit = sqm					
		Taking output = 7500 sqm					
		a) Labour					
		Mate	day	0.560	314.67	176.22	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	12.000	300.36	3604.32	L-13
		b) Machinery					
		Mechanical broom hydraulic @ 1250 sqm per hour	hour	6.000	360.00	2160.00	P&M-53
		Hydraulic self propelled chips spreader	hour	6.000	2423.52	14541.12	P&M-09
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	hour	6.000	1010.00	6060.00	P&M-13
		Vibratory roller 8 -10 tonnes @ 30 cum per hour	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Bitumen pressure distributor @ 1750 sqm per hour	hour	4.280	800.00	3424.00	P&M-002
		c) Material					
		Crushed stone aggregate 11.2 mm size	cum	97.500	899.36	87687.60	M-039
		Bitumen (60-70 grade)	tonne	0.250	42271.00	10567.75	M-013
		d) Overhead charges @ 0.055 on (a+b+c)				7523.48	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				14431.41	
		Cost for 7500 sqm = a+b+c+d+e				158745.50	
		Rate per sqm = (a+b+c+d+e)/7500				21.17	
					say	21.20	
		Note Though vibratory roller is required only for 3 hours as per norms, the same is required to be available at site for 6 hours to match with other machines. The usage rates of vibratory roller may be multiplied with a factor of 0.65.					
4.12	406	Wet Mix Macadam					
		Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.					
		Unit = cum					
		Taking output = 225 cum (495 tonnes)					
		a) Labour					
		Mate	day	0.480	314.67	151.04	L-12
		Mazdoor skilled	day	2.000	414.80	829.60	L-15
		Mazdoor	day	10.000	300.36	3003.60	L-13
		b) Machinery					
		Wet mix plant of 75 tonne hourly capacity	hour	6.600	2807.00	18526.20	P&M-107
		Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
		Front end loader 1 cum capacity	hour	6.000	900.00	5400.00	P&M-06
		Paver finisher	hour	6.000	800.00	4800.00	P&M-57
		Vibratory roller 8 - 10 tonne	hour	6x0.65	600.00	2340.00	P&M-16
		or					
		Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000			
		Water tanker 6 KL capacity	hour	3.000	111.24	333.72	P&M-17
		Tipper	tonne.km	495 x L	2.68	1326.60	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				132.66	
		c) Material (Table 400-11)					
		45 mm to 22.4 mm@ 30 per cent	cum	89.100	963.25	85825.58	M-005
		22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	1030.00	122364.00	M-029
		2.36 mm to 75 micron@ 30 per cent	cum	89.100	498.00	44371.80	M-024
		Cost of water	KL	18.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				16788.46	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				32203.33	
		Cost for 225 cum = a+b+c+d+e				354236.59	

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Rate per cum = (a+b+c+d+e)/225				1574.38	
					say	1574.00	
		Note					
		1. Though vibratory roller is required only for 3 hours as per norms, the same is required to be available at site for 6 hours to match with other machines. The usage rates of vibratory roller may be multiplied with a factor of 0.65					
		2. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative which can be used if the thickness of individual layer does not exceed 100 mm.					
4.13	407	Construction of Median and Island with Soil Taken from Roadway Cutting					
		Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause 407					
		Unit = cum					
		Taking output = 21 cum					
		a) Labour					
		Mate	day	0.240	314.67	75.52	L-12
		Mazdoor	day	6.000	300.36	1802.16	L-13
		b) Machinery					
		Water tanker 6 KL with 5 km lead and 1 trip per hour	hour	1.000	111.24	111.24	P&M-17
		Plate compactor @ 3.5 cum per hour	hour	6.000	142.99	857.95	P&M-019
		c) Material					
		Cost of water	KL	6.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				156.58	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				300.35	
		Cost for 21 cum = a+b+c+d+e				3303.80	
		Rate per cum = (a+b+c+d+e)/21				157.32	
					say	157.00	
		Note					
		This analysis provides for median and island with earthen top. In case the surface is required to be turfed or planted with shrubs, the same is required to be provided separately as per analysis given in the chapter on horticulture. In case granular fill is required to be paved, quantities of paving are required to be calculated as per approved design and paid separately.					
4.14	407	Construction of Median and Island with Soil Taken from Borrow Areas					
		Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 407					
		Unit = cum					
		Taking output = 21 cum					
		a) Labour					
		Mate	day	0.160	314.67	50.35	L-12
		Mazdoor	day	4.000	300.36	1201.44	L-13
		b) Machinery					
		Water tanker with 5 km lead	hour	1.000	111.24	111.24	P&M-17
		Plate Compactor @ 3.5 cum per hour	hour	6.000	142.99	857.95	P&M-019
		Hydraulic Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.500	1000.00	500.00	P&M-49
		Tipper 10 tonne capacity	tonne.km	52.5 x L	2.68	140.70	Lead = 1 km & P&M-67
		Add 10 per cent of cost of transportation to cover cost of loading and unloading				14.07	
		c) Material					
		Cost of water	KL	6.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				158.17	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				303.39	
		Cost for 21 cum = a+b+c+d+e				3337.31	
		Rate per cum = (a+b+c+d+e)/ 21				158.92	
					say	159.00	

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	This analysis provides for median and island with earthen top. In case the surface is required to be turfed or planted with shrubs, the same is required to be provided separately as per analysis given in the chapter on horticulture. In case surface finish is of hard type, the same may be provided separately as per approved design.					
4.15			Construction of Shoulders					
			A. Earthen Shoulders					
			The rate as applicable for sub-grade construction may be adopted.					
			B. Hard Shoulders					
			Rate as applicable for sub-base and or base may be adopted as per approved design.					
			C. Paved shoulders					
			The rate may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.					
4.16	409		Footpaths and Separators					
			Construction of footpath/separator by providing a 150 mm compacted granular sub base as per clause 401 and 25 mm thick cement concrete grade M15, over laid with pre-cast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel..					
			Unit = sqm					
			Taking output = 300 sqm					
			a) Labour					
			Mate	day	1.360	314.67	427.95	L-12
			Mason	day	4.000	479.16	1916.64	L-11
			Mazdoor	day	30.000	300.36	9010.80	L-13
			b) Machinery					
			Vibratory road roller 8 -10 tonnes @60 cum per hour	hour	0.750	600.00	450.00	P&M-16
			Water tanker 6 KL capacity @ 1 trip per hour	hour	2.000	111.24	222.48	P&M-17
			Concrete mixer 0.4/0.28 cum per hour	hour	6.000	412.64	2475.84	P&M-003
			c) Material					
			i) For Granular sub base material					
			53 mm to 26.5 mm @ 35 per cent	cum	20.790	900.54	18722.23	M-090
			26.5 mm to 4.75 mm @ 45 per cent	cum	26.730	965.27	25801.67	M-088
			2.36 mm below @ 20 per cent	cum	11.880	498.00	5916.24	M-024
			ii) For cement concrete grade M157.5 cum					
			Aggregate 12 mm crushed @ 0.9 cum of concrete	cum	6.750	999.25	6744.94	M-040
			Sand @ 0.45 cum/cum of concrete	cum	3.380	252.20	852.44	M-001
			Cement	tonne	1.880	5000.00	9400.00	M-015
			iii) For cement plaster 1:3					
			Sand	cum	3.840	252.20	968.45	M-001
			Cement	tonne	1.830	5000.00	9150.00	M-015
			iv) Pre-cast cement concrete tiles					
			Tiles size 300 x 300 mm and 25 mm thick	each	3300.000	24.81	81873.00	M-182
			v) RCC pipes					
			Pipes 200 mm dia,2.5 m long for drainage	metre	22.500	144.75	3256.88	M-146
			vi) Cost of water	KL	12.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				9745.42	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				18693.50	
			Cost for 300 sqm = a+b+c+d+e				205628.46	
			Rate per sqm = (a+b+c+d+e)/300				685.43	
						say	685.00	
4.17	410		Crusher Run Macadam Base					
			Providing crushed stone aggregate, depositing on a prepared surface by hauling vehicles, spreading and mixing with a motor grader, watering and compacting with a vibratory roller to clause 410 to form a layer of sub-base/Base					
			Unit = cum					
			Taking output = 360 cum					
		A	By Mix in Place Method					
			a) Labour					
			Mate	day	0.480	314.67	151.04	L-12
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			Mazdoor	day	10.000	300.36	3003.60	L-13

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Machinery					
		Tractor attached with rotavator @ 25 cum per hour	hour	12.000	227.88	2734.56	P&M-14
		Motor grader 110 HP	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8 -10 tonnes @ 60 cum per hour	hour	6.000	600.00	3600.00	P&M-16
		Water tanker 6 KL capacity	hour	6.000	111.24	667.44	P&M-17
		c) Material					
		Aggregate at site					
		i) For 53 mm maximum size					
		63 mm to 45 mm @ 33 per cent	cum	157.460	780.36	122875.49	M-008
		22.5 mm to 5.6 mm@ 32 per cent	cum	151.060	1014.17	153200.52	M-091
		Below 5.6 mm @ 35 per cent	cum	166.680	476.60	79439.69	M-028
		Cost of water	KL	36.000	0.00	0.00	M-1629
		Or					
		ii) For 45 mm maximum size					
		45 mm to 22.5 mm@ 5 per cent	cum	24.120	963.25	23233.59	M-005
		22.4 mm to 5.6 mm@ 50 per cent	cum	237.600	1014.17	240966.79	M-091
		Below 5.6 mm@ 45 per cent	cum	213.480	476.60	101744.57	M-028
		Cost of water	KL	36.000	0.00	0.00	M-1629
4.17A	(i)	For 53 mm maximum size					
		d) Overhead charges @ 0.055 on (a+b+c)				20966.11	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				40216.80	
		Cost for 360.0cum = a+b+c+d+e				442384.85	
		Rate per cum = (a+b+c+d+e)/360				1228.85	
		or			say	1229.00	
4.17A	(ii)	For 45 mm maximum size					
		d) Overhead charges @ 0.055 on (a+b+c)				21539.72	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				41317.09	
		Cost for 360.0cum = a+b+c+d+e				454488.00	
		Rate per cum = (a+b+c+d+e)/360				1262.47	
					say	1262.00	
	Note	Any one of the aggregate grading may be adopted					
4.17	B	By Mixing Plant :					
		Unit = cum					
		Taking output = 225 cum (450 tonnes)					
		a) Labour					
		Mate	day	0.280	314.67	88.11	L-12
		Mazdoor skilled	day	1.000	414.80	414.80	L-15
		Mazdoor	day	6.000	300.36	1802.16	L-13
		b) Machinery					
		Wet mix plant @ 75 tonne per hour	hour	6.000	2807.00	16842.00	P&M-106
		Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Motor grader 110 HP	hour	6.000	2450.00	14700.00	P&M-54
		Vibratory roller 8 - 10 tonne	hour	6.000	600.00	3600.00	P&M-16
		Water tanker 6 KL capacity	hour	3.000	111.24	333.72	P&M-17
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		c) Material					
		Aggregate at site					
		i) For 53 mm maximum size					
		63 mm to 45 mm @ 33 per cent	cum	98.400	780.36	76787.42	M-008
		22.5 mm to 5.6 mm@ 32 per cent	cum	94.410	1014.17	95747.79	M-091
		Below 5.6 mm @ 35 per cent	cum	104.180	476.60	49652.19	M-028
		Or					
		ii) For 45 mm maximum size					
		45 mm to 22.5 mm@ 5 per cent	cum	15.060	963.25	14506.55	M-005
		22.4 mm to 5.6 mm@ 50 per cent	cum	148.500	1014.17	150604.25	M-091
		Below 5.6 mm@ 45 per cent	cum	133.430	476.60	63592.74	M-028
		Cost of water	KL	18.000	0.00	0.00	M-1629
4.17 B	(i)	For 53 mm maximum size					
		d) Overhead charges @ 0.055 on (a+b+c)				15539.41	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				29807.42	

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cost for 225 cum = a+b+c+d+e				327881.62	
		Rate per cum = (a+b+c+d+e)/225				1457.25	
					say	1457.00	
4.17 B	(ii)	For 45 mm maximum size					
		d) Overhead charges @ 0.055 on (a+b+c)				15897.80	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				30494.87	
		Cost for 225 cum = a+b+c+d+e				335443.59	
		Rate per cum = (a+b+c+d+e)/225				1490.86	
					say	1491.00	
4.18	Suggestive	Lime, Flyash Stabilised Soil Sub-Base					
		Construction of Sub-base using lime - Flyash admixture with granular soil, free from organic matter/ deleterious material or clayey silts and low plasticity clays having PI between 5 and 20 and liquid limit less than 25 and commercial dry lime, slaked at site or pre-slaked with CaO content not less than 50 per cent, Flyash to conform to gradation as per clause 4.3 of IRC: 88-1984, lime + Flyash content ranging between 10 to 30 per cent, the minimum un-confined compressive strength and CBR value after 28 days curing and 4 days soaking to be 7.5kg/sq. cm and 25 per cent respectively, all as specified in IRC: 88-1984.					
		Unit = cum					
		Taking output = 480 cum (720 tonnes, density 1.50 t/cum)					
		Assumptions made					
		Total mass taken for analysis = 720 t					
		Lime + Flyash admixture @ 20 per cent = 0.2 x 720=144 t					
		Soil = 720 -144 = 576 t					
		576 /1.6 = 360 cum					
		Lime + Flyash = 144 t					
		Ratio Lime 4 : Flyash 16					
		Lime = 29 kg.					
		Flyash = 115 kg.					
		a) Labour					
		Mate	day	0.240	314.67	75.52	L-12
		Mazdoor	day	6.000	300.36	1802.16	L-13
		Mazdoor (Skilled)	day	1.000	414.80	414.80	L-15
		b) Machinery					
		Hydraulic Excavator 0.90 cum bucket capacity @ 60cum/hr. for 360 cum soil	hour	6.000	1000.00	6000.00	P&M-49
		Tipper 10T capacity for carriage of soil 576 tonnes	tonne.km	578 x L	2.68	1549.04	Lead =1 km & P&M-67
		Tipper 10T capacity for carriage of 115 tonnes Flyash	tonne.km	115 x L	2.68	308.20	Lead =1 km & P&M-67
		Tipper 10T capacity for carriage of 29 tonnes of lime from store to work site	hour	3.000	1010.00	3030.00	P&M-13
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				303.00	
		Tractor with disc harrows for pulverisation	hour	6.000	168.75	1012.50	P&M-72
		Motor Grader 110 HP @ 50 cum per hour for mixing in-place and grading	hour	9.600	2450.00	23520.00	P&M-54
		Vibratory roller 8 - 10 tonne	hour	6.000	600.00	3600.00	P&M-16
		Water tanker 6 KL capacity	hour	12.000	111.24	1334.88	P&M-17
		c) Material					
		Slaked Lime	tonne	29.000	4703.60	136404.40	M-293
		Compensation for earth taken from private source	cum	360.000	28.58	10288.80	M-056
		d) Overhead charges @ 0.055 on (a+b+c)				10430.38	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				20007.37	
		Cost for 480 cum = a+b+c+d+e				220081.05	
		Rate per cum= (a+b+c+d+e)/480				458.50	
					say	459.00	
	Note	1.Compensation for earth will vary from place to place and will have to be assessed realistically as per particular ground situation. In case earth is available from Govt. land, compensation for earth will not be required. The position is required to be clearly stated in the cost estimate.					

Analysis of Rate

RCD/SOR

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			2. Cost of Flyash has not been considered as same will be available free of cost. Only carriage of Flyash has been provided.					
			3. Lime + Flyash has been taken as 20 per cent of total mass and ratio of lime and Flyash as 1:4 for estimating purposes. Total quantities will be as per approved design.					

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.1	502		Prime Coat					
			Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.					
			Unit = sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	2.000	300.36	600.72	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	360.00	1008.00	P&M-53
			Air compressor 250 cfm	hour	2.800	293.76	822.53	P&M-032
			Bitumen pressure distributor @ 1750 sqm per hour	hour	2.000	800.00	1600.00	P&M-002
			Water tanker 6 KL capacity @ 1 tripper hour	hour	1.000	111.24	111.24	P&M-17
			c) Material					
			Bitumen emulsion @ 0.6 kg per sqm	tonne	2.100	42199.00	88617.90	M-105
			Cost of water	KL	6.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				5103.21	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				9788.88	
			Cost for 3500 sqm = a+b+c+d+e				107677.64	
			Rate per sqm = (a+b+c+d+e)/3500				30.77	
						say	31.00	
		Note	Bitumen primer has been provided @ 0.60 kg per sqm as per clause 502.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 502.4.3.					
5.2	503		Tack Coat					
			Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.					
			Unit = sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	2.000	300.36	600.72	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	360.00	1008.00	P&M-53
			Air compressor 250 cfm	hour	2.800	293.76	822.53	P&M-032
			Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	735.48	1470.96	P&M-43
			c) Material					
			Bitumen emulsion @ 0.2 kg per sqm	tonne	0.700	42199.00	29539.30	M-105
			d) Overhead charges @ 0.055 on (a+b+c)				1840.67	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3530.73	
			Cost for 3500 sqm = a+b+c+d+e				38838.08	
			Rate per sqm = (a+b+c+d+e)/3500				11.10	
						say	11.00	
		Note	1. Bitumen emulsion has been provided @ 0.20 kg per sqm as per clause 503.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and actual quantity approved by the Engineer after preliminary trials referred to in clause No. 503.4.3					
			2. An output of 3500 sqm has been considered in case of prime coat and tack coat which can be covered by bituminous courses on the same day.					
5.3	504		Bituminous Macadam					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction.					
		Unit = cum					
		Taking output = 205 cum (450 tonnes)					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	300.36	4805.76	L-13
		Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	25868.00	155208.00	P&M-47
		Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	360.00	792.00	P&M-53
		Air compressor 250 cfm	hour	2.200	293.76	646.27	P&M-032
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
		Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead = 1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		i) Bitumen@ 3.3 per cent of mix	tonne	14.850	42271.00	627724.35	M-013
		weight of mix = 205 x 2.2 = 450 tonne					
		ii) Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 14.85 tonnes					
		Weight of aggregate = 450 - 14.85 = 435.15 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 290.1 cum					
		*Grading I (40 mm nominal size)					
		37.5 - 25 mm 15 per cent	cum	43.510	998.25	43433.86	M-037
		25 - 10 mm 45 per cent	cum	130.550	1153.28	150560.70	M-012
		10 - 5 mm 25 per cent	cum	72.530	954.78	69250.19	M-010
		5 mm and below 15 per cent	cum	43.510	476.60	20736.87	M-028
		or					
		Grading II (19 mm nominal size)					
		25 - 10 mm 40 per cent	cum	116.040	1153.28	133826.61	M-012
		10 - 5 mm 40 per cent	cum	116.040	954.78	110792.67	M-010
		5 mm and below 20 per cent	cum	58.020	476.60	27652.33	M-028
		* Any one of the alternative may be adopted as per approved design					
	(i)	for Grading I (40 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				61804.03	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				118551.37	
		Cost for 205 cum = a+b+c+d+e				1304065.02	
		Rate per cum = (a+b+c+d+e)/205 (For Grading I)				6361.29	
					say	6361.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(ii)	for GradingII(19 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				61159.98	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				117315.96	
			Cost for 205 cum = a+b+c+d+e				1290475.56	
			Rate per cum = (a+b+c+d+e)/205 (For Grading-II)				6295.00	
						say	<u>6295.00</u>	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case BM is laid over freshly laid tack coat, provision of Mechanical broom and 2 mazdoors for the same shall be deleted as the same has been included in the cost of tack coat.					
5.3A	504		Bituminous Macadam with Modified Graded Bitumen					
			Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	314.67	264.32	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines,	day	16.000	300.36	4805.76	L-13
			Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	25868.00	155208.00	P&M-47
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	360.00	792.00	P&M-53
			Air compressor 250 cfm	hour	2.200	293.76	646.27	P&M-032
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
			Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1250.00	4875.00	P&M-012
			c) Material					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		i) Bitumen@ 3.3 per cent of mix	tonne	14.850	43171.00	641089.35	M-050
		weight of mix = 205 x 2.2 = 450 tonne					
		ii) Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 14.85 tonnes					
		Weight of aggregate = 450 -14.85 = 435.15 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 290.1 cum					
		*Grading I (40 mm nominal size)					
		37.5 - 25 mm 15 per cent	cum	43.510	998.25	43433.86	M-037
		25 - 10 mm 45 per cent	cum	130.550	1153.28	150560.70	M-012
		10 - 5 mm 25 per cent	cum	72.530	954.78	69250.19	M-010
		5 mm and below 15 per cent	cum	43.510	476.60	20736.87	M-028
		or					
		Grading II (19 mm nominal size)					
		25 - 10 mm 40 per cent	cum	116.040	1153.28	133826.61	M-012
		10 - 5 mm 40 per cent	cum	116.040	954.78	110792.67	M-010
		5 mm and below 20 per cent	cum	58.020	476.60	27652.33	M-028
		* Any one of the alternative may be adopted as per approved design					
	(i)	for Grading I (40 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				62539.10	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				119961.37	
		Cost for 205 cum = a+b+c+d+e				1319575.10	
		Rate per cum = (a+b+c+d+e)/205 (For Grading I)				6436.95	
					say	6437.00	
	(ii)	for Grading II (19 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				61895.05	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				118725.97	
		Cost for 205 cum = a+b+c+d+e				1305985.64	
		Rate per cum = (a+b+c+d+e)/205 (For Grading-II)				6370.66	
					say	6371.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.3B	504		Bituminous Macadam with VG-30 Bulk Bitumen					
			Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	314.67	264.32	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines	day	16.000	300.36	4805.76	L-13
			Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	25868.00	155208.00	P&M-47
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	360.00	792.00	P&M-53
			Air compressor 250 cfm	hour	2.200	293.76	646.27	P&M-032
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
			Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling	hour	6.00x0.65*	803.00	3131.70	P&M-011
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1250.00	4875.00	P&M-012
			c) Material					
			i) Bitumen@ 3.3 per cent of mix	tonne	14.850	35450.00	526432.50	M-192
			weight of mix = 205 x 2.2 = 450 tonne					
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 14.85 tonnes					
			Weight of aggregate = 450 -14.85 = 435.15 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 290.1 cum					
			*Grading I (40 mm nominal size)					
			37.5 - 25 mm 15 per cent	cum	43.510	998.25	43433.86	M-037
			25 - 10 mm 45 per cent	cum	130.550	1153.28	150560.70	M-012
			10 - 5 mm 25 per cent	cum	72.530	954.78	69250.19	M-010
			5 mm and below 15 per cent	cum	43.510	476.60	20736.87	M-028
			or					
			Grading II (19 mm nominal size)					
			25 - 10 mm 40 per cent	cum	116.040	1153.28	133826.61	M-012
			10 - 5 mm 40 per cent	cum	116.040	954.78	110792.67	M-010

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			5 mm and below 20 per cent	cum	58.020	476.60	27652.33	M-028
			* Any one of the alternative may be adopted as per approved design					
		(i)	for Grading I (40 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				56232.98	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				107865.08	
			Cost for 205 cum = a+b+c+d+e				1186515.83	
			Rate per cum = (a+b+c+d+e)/205 (For Grading I)				5787.88	
						say	5788.00	
		(ii)	for GradingII(19 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				55588.93	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				106629.67	
			Cost for 205 cum = a+b+c+d+e				1172926.37	
			Rate per cum = (a+b+c+d+e)/205 (For Grading-II)				5721.59	
						say	5722.00	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case BM is laid over freshly laid tack coat, provision of Mechanical broom and 2 mazdoors for the same shall be deleted as the same has been included in the cost of tack coat.					
5.4	505		Bituminous Penetration Macadam					
			Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction					
		A	50 mm thick					
			Unit = sqm					
			Taking output = 4500 sqm (225 cum)					
			a) Labour					
			Mate	day	0.320	314.67	100.69	L-12
			Mazdoor including for brooming of key aggregates	day	6.000	300.36	1802.16	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour for 4500 x 2 sqm = 9000 sqm	hour	6.000	2423.52	14541.12	P&M-09
			Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.570	800.00	2056.00	P&M-002
			Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	1010.00	10100.00	P&M-13
			Vibratory roller 8 tonnes	hour	6.000	600.00	3600.00	P&M-16
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			c) Material					
			Bitumen@ 5 kg per sqm	tonne	22.500	42271.00	951097.50	M-013
			Crushed stone coarse aggregate passing 45 mm and retained on 2.8 mm sieve @ 0.06 cum per sqm	cum	270.000	870.77	235107.90	M-030

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.015 cum per sqm	cum	67.500	1030.00	69525.00	M-029
			d) Overhead charges @ 0.055 on (a+b+c)				71178.80	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				136533.88	
			Cost for 4500 sqm = a+b+c+d+e				1501872.65	
			Rate per sqm = (a+b+c+d+e)/4500				333.75	
						say	334.00	
		Note	2 tippers will be needed to match the capacity of chip spreader and front end loader.					
5.4		B	75 mm thick					
			Unit = sqm					
			Taking output = 4500 sqm (337.5 cum compacted).					
			a) Labour					
			Mate	day	0.400	314.67	125.87	L-12
			Mazdoor including for brooming of key aggregates	day	8.000	300.36	2402.88	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour for 4500 x 2 sqm	hour	6.000	2423.52	14541.12	P&M-09
			Bitumen pressure distributor for@ 1750 sqm per hour	hour	2.570	800.00	2056.00	P&M-002
			Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	1010.00	10100.00	P&M-13
			Vibratory roller 8 tonnes	hour	6.000	600.00	3600.00	P&M-16
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			c) Material					
			Bitumen@ 6.8 kg per sqm	tonne	30.600	42271.00	1293492.60	M-013
			Crushed stone coarse aggregate (loose passing 63 mm and retained on 2.8 mm sieve @ 0.09 cum per sqm	cum	405.000	961.50	389407.50	M-031
			Key aggregates passing 26.5 mm and retained on 2.8 mm sieve @ 0.018 cum per sqm	cum	81.000	965.27	78186.87	M-088
			d) Overhead charges @ 0.055 on (a+b+c)				99007.83	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				189915.03	
			Cost for 4500 sqm = a+b+c+d+e				2089065.30	
			Rate per sqm = (a+b+c+d+e)/4500				464.24	
						say	464.00	
		Note	2 tippers and 2 rollers will be needed to match the capacity of chip spreader and front end loader.					
5.5	506		Built-up-Spray Grout					
			Providing, laying and rolling of built-up-spray grout layer over prepared base consisting of a two layer composite construction of compacted crushed coarse aggregates using motor grader for aggregates. key stone chips spreader may be used with application of bituminous binder after each layer, and with key aggregates placed on top of the second layer to serve as a Base conforming to the line, grades and cross-section specified, the compacted layer thickness being 75 mm					
			Unit = sqm					
			Taking output = 3000 sqm (225 cum)					
			a) Labour					
			Mate	day	0.400	314.67	125.87	L-12
			Mazdoor including for brooming of key aggregates	day	8.000	300.36	2402.88	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour for 3000 x 3 sqm	hour	6.000	2423.52	14541.12	P&M-09

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Bitumen pressure distributor for 3000 x 2 sqm @ 1750 sqm per hour	hour	3.430	800.00	2744.00	P&M-002
		Tipper 5.5 cum capacity	hour	10.000	1010.00	10100.00	P&M-13
		Vibratory roller 8 tonnes	hour	6.000	600.00	3600.00	P&M-16
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		c) Material					
		Bitumen 30 kg per 10 sqm @ 15 kg per 10 sqm for each layer	tonne	9.000	42271.00	380439.00	M-013
		Crushed stone coarse aggregate passing 53 mm and retained on 2.8 mm sieve @ 0.5 cum per 10 sqm for each layer	cum	300.000	871.50	261450.00	M-006
		Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.000	1030.00	40170.00	M-029
		d) Overhead charges @ 0.055 on (a+b+c)				39699.14	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				76150.16	
		Cost for 3000 sqm = a+b+c+d+e				837651.76	
		Rate per sqm = (a+b+c+d+e)/3000				279.22	
					say	279.00	
	Note	2 tippers will be needed to match the capacity of hydraulic chip spreader and front end loader.					
5.6	507	Dense Graded Bituminous Macadam					
		Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects					
		Unit = cum					
		Taking output = 195 cum (450 tonnes)					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	300.36	4805.76	L-13
		Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
		Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead = 1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Materials					
		Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	42271.00	808644.23	M-013
		Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 19.13 tonnes					
		Weight of aggregate = 450 - 19.13 = 430.87 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 287.25 cum					
		Grading - I 40 mm (Nominal Size)					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			37.5 - 25 mm 22 per cent	cum	63.190	998.25	63079.42	M-037
			25 - 10 mm 13 per cent	cum	37.340	1153.28	43063.48	M-012
			10 - 4.75 mm 19 per cent	cum	54.580	954.78	52111.89	M-010
			4.75 mm and below 44 per cent	cum	126.390	476.60	60237.47	M-028
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
			or					
			Grading - II 19 mm (Nominal Size)					
			25 - 10 mm 30 per cent	cum	86.160	1153.28	99366.60	M-012
			10 - 5 mm 28 per cent	cum	80.430	954.78	76792.96	M-010
			5 mm and below 40 per cent	cum	114.900	476.60	54761.34	M-028
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
			* Any one of the alternative may be adopted as per approved design					
		(i)	For Grading I (40 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				70303.58	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				134855.05	
			Cost for 195 cum = a+b+c+d+e				1483405.53	
			Rate per cum = (a+b+c+d+e)/195 (For Grading I)				7607.21	
						say	<u>7607.00</u>	
		(ii)	For GradingII (19 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				70987.15	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				136166.27	
			Cost for 195 cum = a+b+c+d+e				1497828.97	
			Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				7681.17	
						say	<u>7681.00</u>	
		Note	*1. Although the roller are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case DBM is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.					
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e., excluding the weight of bitumen. The weight of filler will also be 2 per cent by weight of dry aggregates.					
5.6 A	507		Dense Graded Bituminous Macadam with Modified Graded Bitumen					
			Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of					
			Unit = cum					
			Taking output = 195 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	314.67	264.32	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines,	day	16.000	300.36	4805.76	L-13
		Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
		Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Materials					
		Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	43171.00	825861.23	M-050
		Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 19.13 tonnes					
		Weight of aggregate = 450 -19.13 = 430.87 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 287.25 cum					
		Grading - I 40 mm (Nominal Size)					
		37.5 - 25 mm 22 per cent	cum	63.190	998.25	63079.42	M-037
		25 - 10 mm 13 per cent	cum	37.340	1153.28	43063.48	M-012
		10 -4.75 mm 19 per cent	cum	54.580	954.78	52111.89	M-010
		4.75 mm and below 44 per cent	cum	126.390	476.60	60237.47	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		or					
		Grading - II 19 mm (Nominal Size)					
		25 - 10 mm 30 per cent	cum	86.160	1153.28	99366.60	M-012
		10 - 5 mm 28 per cent	cum	80.430	954.78	76792.96	M-010
		5 mm and below 40 per cent	cum	114.900	476.60	54761.34	M-028

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
			* Any one of the alternative may be adopted as per approved design					
		(i)	For Grading I (40 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				71250.51	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				136671.44	
			Cost for 195 cum = a+b+c+d+e				1503385.86	
			Rate per cum = (a+b+c+d+e)/195 (For Grading I)				7709.67	
						say	<u>7710.00</u>	
		(ii)	For GradingII (19 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				71934.09	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				137982.66	
			Cost for 195 cum = a+b+c+d+e				1517809.30	
			Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				7783.64	
						say	<u>7784.00</u>	
		Note	*1. Although the roller are required only for 3 hours as per norms of output, but the same have to be available at site for					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been					
			4. In case DBM is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors shall be deleted as the					
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should					
			6. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e.. excluding the weight of bitumen. The weight of filler will also be 2 per cent by weight of dry aggregates.					
5.6 B	507		Dense Graded Bituminous Macadam with VG-30 Grade Bulk Bitumen					
			Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per					
			Unit = cum					
			Taking output = 195 cum (450 tonnes)					
			a) Labour					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mate	day	0.840	314.67	264.32	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	300.36	4805.76	L-13
			Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
			Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
			smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1250.00	4875.00	P&M-012
			c) Materials					
			Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	35450.00	678158.50	M-192
			Aggregate					
			Total weight of mix = 450 tonnes					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Weight of bitumen = 19.13 tonnes					
			Weight of aggregate = 450 - 19.13 = 430.87 tonnes					
			<i>Taking density of aggregate = 1.5 ton/cum</i>					
			Volume of aggregate = 287.25 cum					
			Grading - I 40 mm (Nominal Size)					
			37.5 - 25 mm 22 per cent	cum	63.190	998.25	63079.42	M-037
			25 - 10 mm 13 per cent	cum	37.340	1153.28	43063.48	M-012
			10 - 4.75 mm 19 per cent	cum	54.580	954.78	52111.89	M-010
			4.75 mm and below 44 per cent	cum	126.390	476.60	60237.47	M-028
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
			or					
			Grading - II 19 mm (Nominal Size)					
			25 - 10 mm 30 per cent	cum	86.160	1153.28	99366.60	M-012
			10 - 5 mm 28 per cent	cum	80.430	954.78	76792.96	M-010
			5 mm and below 40 per cent	cum	114.900	476.60	54761.34	M-028
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
			* Any one of the alternative may be adopted as per approved design					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(i)	For Grading I (40 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				63126.86	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				121088.80	
			Cost for 195 cum = a+b+c+d+e				1331976.84	
			Rate per cum = (a+b+c+d+e)/195 (For Grading I)				6830.65	
						say	<u>6831.00</u>	
		(ii)	For GradingII (19 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				63810.44	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				122400.03	
			Cost for 195 cum = a+b+c+d+e				1346400.28	
			Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				6904.62	
						say	<u>6905.00</u>	
		Note	*1. Although the roller are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case DBM is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.					
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		6. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e., excluding the weight of bitumen. The weight of filler will also be 2 per cent by weight of dry aggregates.					
5.7	508	Semi-Dense Bituminous Concrete					
		Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects.					
		Unit = cum					
		Taking output = 195 cum (450 tonnes)					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	300.36	4805.76	L-13
		Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
		Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		* Grading I: 13 mm (Nominal Size)					
		i) Bitumen@ 4.5 per cent of weight of mix	tonne	20.250	42271.00	855987.75	M-013
		ii) Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 20.25 tonnes					
		Weight of aggregate = 450-20.25 = 429.75 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 286.5 cum					
		13.2 - 10 mm 20 per cent	cum	57.300	1162.00	66582.60	M-034
		10 - 5 mm 38 per cent	cum	108.870	954.78	103946.90	M-010
		5 mm and below 40 per cent	cum	114.600	476.60	54618.36	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		or					
		Grading II: 10 mm (Nominal Size)					
		Bitumen@5 per cent of weight of mix	tonne	22.500	42271.00	951097.50	M-013
		weight of mix = 450 tonne					
		Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 22.5 tonnes					
		Weight of aggregate = 450 -22.50 = 427.50 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 285 cum					
		9.5 - 4.75 mm@ 57 per cent	cum	162.450	954.78	155104.01	M-010

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			4.75 and below@ 41 per cent	cum	116.850	476.60	55690.71	M-028
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
			*Any one of the alternative may be adopted as per approved design					
		(i)	for Grading I (13 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				73273.53	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				140551.96	
			Cost for 195 cum = a+b+c+d+e				1546071.51	
			Rate per cum = (a+b+c+d+e)/195 (For Grading I)				7928.57	
						say	7929.00	
5.7		(ii)	for GradingII(10 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				77715.14	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				149071.78	
			Cost for 195 cum = a+b+c+d+e				1639789.56	
			Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				8409.18	
						say	8409.00	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case SDBC is laid over freshly laid tack coat, provision of broom and 2 mazdoor shall be deleted as the same has been included in the cost of tack coat.					
			5. The quantity of Bitumen to be adjusted as per job mix formula.					
5.7 A	508		Semi-Dense Bituminous Concrete with Modified Graded Bitumen.					
			Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects.					
			Unit = cum					
			Taking output = 195 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	314.67	264.32	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	300.36	4805.76	L-13
			Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
			Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		* Grading I: 13 mm (Nominal Size)					
		i) Bitumen@ 4.5 per cent of weight of mix	tonne	20.250	43171.00	874212.75	M-050
		ii) Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 20.25 tonnes					
		Weight of aggregate = 450-20.25 = 429.75 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 286.5 cum					
		13.2 - 10 mm 20 per cent	cum	57.300	1162.00	66582.60	M-034
		10 - 5 mm 38 per cent	cum	108.870	954.78	103946.90	M-010
		5 mm and below 40 per cent	cum	114.600	476.60	54618.36	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		or					
		Grading II: 10 mm (Nominal Size)					
		Bitumen@5 per cent of weight of mix	tonne	22.500	43171.00	971347.50	M-050
		weight of mix = 450 tonne					
		Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 22.5 tonnes					
		Weight of aggregate = 450 -22.50 = 427.50 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 285 cum					
		9.5 - 4.75 mm @ 57 per cent	cum	162.450	954.78	155104.01	M-010
		4.75 and below @ 41 per cent	cum	116.850	476.60	55690.71	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		*Any one of the alternative may be adopted as per approved design					
	(i)	for Grading I (13 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				74275.91	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				142474.69	
		Cost for 195 cum = a+b+c+d+e				1567221.62	
		Rate per cum = (a+b+c+d+e)/195 (For Grading I)				8037.03	
					say	8037.00	
5.7	(ii)	for Grading II (10 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				78828.89	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				151208.15	
		Cost for 195 cum = a+b+c+d+e				1663289.68	
		Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				8529.69	
					say	8530.00	
	Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65					
		2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
		3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		4. In case SDBC is laid over freshly laid tack coat, provision of broom and 2 mazdoor shall be deleted as the same has been included in the cost of tack coat.					
		5. The quantity of Bitumen to be adjusted as per job mix formula.					
5.8	509	Bituminous Concrete					
		Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects.					
		Unit = cum					
		Taking output = 191 cum (450 tonnes)					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	300.36	4805.76	L-13
		Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
		Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		i) Bitumen@ 5 per cent of weight of mix	tonne	22.500	42271.00	951097.50	M-013
		ii) Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 22.5 tonnes					
		Weight of aggregate = 450 -22.50 = 427.50 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 285 cum					
		* Grading - I-19 mm (Nominal Size)					
		20 - 10 mm 35 per cent	cum	99.750	1330.60	132727.35	M-035
		10 - 5 mm 23 per cent	cum	65.550	954.78	62585.83	M-010
		5 mm and below 40 per cent	cum	114.000	476.60	54332.40	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		or					
		Grading - II-13 mm (Nominal Size)					
		13.2 - 10 mm 30 per cent	cum	85.500	1162.00	99351.00	M-034
		10 - 5 mm 25 per cent	cum	71.250	954.78	68028.08	M-010
		5 mm and below 43 per cent	cum	122.550	476.60	58407.33	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		*Any one of the alternative may be adopted as per approved design					
	(i)	for Grading-I (13 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				79851.94	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				153170.54	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cost for 191 cum = a+b+c+d+e				1684875.98	
			Rate per cum = (a+b+c+d+e)/191				8821.34	
						say	<u>8821.00</u>	
5.8		(ii)	for Grading-II (10 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				78539.69	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				150653.40	
			Cost for 191 cum = a+b+c+d+e				1657187.41	
			Rate per cum = (a+b+c+d+e)/191 (For Grading-II)				8676.37	
						say	<u>8676.00</u>	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case BC is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.					
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be amended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e.. excluding the weight of bitumen. The weight of filler will also be 2 per cent by weight of dry aggregates.					
5.9	510		Surface Dressing					
			Providing and laying surface dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller.					
			Unit = sqm					
			Taking output = 9000 sqm					
		Case -1	:-19 mm nominal chipping size					
			a) Labour					
			Mate	day	0.440	314.67	138.45	L-12
			Mazdoor	day	9.000	300.36	2703.24	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	7.200	360.00	2592.00	P&M-53
			Air compressor 250 cfm	hour	7.200	293.76	2115.07	P&M-032
			Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	2423.52	14541.12	P&M-09
			Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	1010.00	6060.00	P&M-13
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Bitumen pressure distributor	hour	6.000	800.00	4800.00	P&M-002
			Smooth wheeled roller 8-10 tonne weight	hour	6.000	803.00	4818.00	P&M-011
			c) Material					
			Bitumen@ 1.20 kg per sqm	tonne	10.800	42271.00	456526.80	M-013
			Crushed stone chipping, 19 mm nominal size @ 0.015 cum per sqm	cum	135.000	1110.00	149850.00	M-041
			d) Overhead charges @ 0.055 on (a+b+c)				35770.59	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				68614.49	
			Cost for 9000 sqm = a+b+c+d+e				754759.36	
			Rate per sqm = (a+b+c+d+e)/9000				83.86	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	84.00	
5.9		Case - II	13 mm nominal size chipping					
			a) Labour					
			Mate	day	0.440	314.67	138.45	L-12
			Mazdoor	day	9.000	300.36	2703.24	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	7.200	360.00	2592.00	P&M-53
			Air compressor 250 cfm	hour	7.200	293.76	2115.07	P&M-032
			Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	2423.52	14541.12	P&M-09
			Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	1010.00	6060.00	P&M-13
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	800.00	4800.00	P&M-002
			Vibratory roller 8-10 tonne weight	hour	6.000	600.00	3600.00	P&M-16
			c) Material					
			Bitumen@ 1.00 kg per sqm	tonne	9.000	42271.00	380439.00	M-013
			Crushed stone chipping, 13 mm nominal size @ 0.01 cum per sqm	cum	90.000	999.25	89932.50	M-040
			d) Overhead charges @ 0.055 on (a+b+c)				28223.30	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				54137.43	
			Cost for 9000 sqm = a+b+c+d+e				595511.72	
			Rate per sqm = (a+b+c+d+e)/9000				66.17	
						say	66.00	
		Note	1. Where the proposed aggregate fails to pass the stripping test, an approved adhesion agent may be added to the binder as per clause 510.2.4. Alternatively, chips may be pre-coated as per clause 510.2.5.					
			2. Input for the second coat, where required, will be the same as per the 1st coat mentioned above.					
5.10	511		Open - Graded Premix Surfacing					
			Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or cut-back or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades					
			Unit = sqm					
			Taking output = 10250 sqm (205 cum)					
		(i)	Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .					
			a) Labour					
			Mate	day	0.840	314.67	264.32	L-12
			Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	300.36	4805.76	L-13
			Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			i) Batch type HMP 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
			ii) Electric Generator Set 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
			iii) Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			iv) Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
			v) Paver finisher hydrostatic with sensor attachment	hour	6.000	1500.00	9000.00	P&M-56
			iv) Smooth wheeled/tandem roller 8-10 tonnes weight	hour	6.000	1250.00	7500.00	P&M-012
			c) Material					
			Bitumen@ 14.60 kg per 10 sqm	tonne	14.970	42271.00	632796.87	M-013

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	276.750	886.68	245388.69	M-011
			d) Overhead charges @ 0.055 on (a+b+c)				59724.73	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				114562.90	
			Cost for 10250 sqm = a+b+c+d+e				1260191.87	
			Rate per sqm = (a+b+c+d+e)/10250				122.95	
						say	123.00	
		Note	If a premix sand seal coat of 'B' type is proposed, the same is required to be provided over the open graded premix carpet immediately on the same day. As the same HMP and other machines will be used for laying of premix sand seal coat, out of 6 effective working hours, 4.00 hours may be utilised for laying of premix carpet and balance 2.00 hours for the seal coat. The rate for the premix sand seal coat under clause 513 (case II) has been worked out accordingly by utilising the HMP for 2.00 hours for the purpose of seal coat. In case type 'A' seal coat is proposed, HMP can be worked for six hours for the premix carpet as type 'A' seal coat does not require the use of HMP.					
5.10		(ii)	Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion					
			Unit = sqm					
			Taking output = 900 sqm (24.3 cum)					
			a) Labour					
			Mate	day	0.800	314.67	251.74	L-12
			Mazdoor	day	18.000	300.36	5406.48	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Concrete mixer 0.4/0.28 cum capacity	hour	6.000	412.64	2475.84	P&M-003
			Smooth wheeled steel roller 8-10 tonne	hour	6.000	803.00	4818.00	P&M-011
			c) Material					
			Cationic Bitumen Emulsion @ 21.50 kg per 10 sqm	tonne	1.940	40045.00	77687.30	M-104
			Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	886.68	21546.32	M-011
			d) Overhead charges @ 0.055 on (a+b+c)				6215.84	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11923.11	
			Cost for 900 sqm = a+b+c+d+e				131154.23	
			Rate per sqm = (a+b+c+d+e)/900				145.73	
						say	146.00	
5.11	512		Close Graded Premix Surfacing/Mixed Seal Surfacing					
		Case I	Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour.					
			Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-A) or 13.2 mm to 0.09 mm (Type-B) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.					
			Unit = sqm					
			Taking output = 10250 sqm (205 cum)					
			a) Labour					
			Mate	day	0.840	314.67	264.32	L-12
			Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	300.36	4805.76	L-13
			Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			i) HMP of appropriate capacity - 75 t per hour	hour	6.000	25868.00	155208.00	P&M-47
			ii) Electric Generator Set 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
			iii) Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			iv) Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		v) Paver finisher hydrostatic with sensor attachment	hour	6.000	1500.00	9000.00	P&M-56
		iv) Smooth wheeled 8-10 tonnes weight	hour	6.000	803.00	4818.00	P&M-011
		c) Material					
		Type - A					
		* Bitumen @ 22 kg per 10 sqm	tonne	22.500	42271.00	951097.50	M-013
		Stone crushed aggregates 11.2 mm to 0.09 @ 0.27 cum per 10 sqm	cum	276.750	755.58	209106.77	M-032
		or					
		Type - B					
		Bitumen @ 19 kg per 10 sqm	tonne	19.480	42271.00	823439.08	M-013
		Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	276.750	865.34	239482.85	M-033
		d) Overhead charges @ 0.055 on (a+b+c)				75088.25	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				144032.92	
		Cost for 10250 sqm = a+b+c+d+e				1584362.12	
		Rate per sqm = (a+b+c+d+e)/10250				154.57	
		For Type 'A'			say	155.00	
		For Type 'B'			say	144.00	
		* Any one of the alternative may be adopted					
5.12	513	Seal Coat					
		Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats					
		Unit = sqm					
		Taking output = 10250 sqm (92.25 cum)					
		(i) Case - I : Type A					
		a) Labour					
		Mate	day	0.240	314.67	75.52	L-12
		Mazdoor	day	6.000	300.36	1802.16	L-13
		b) Machinery					
		Hydraulic self propelled chip spreader	hour	6.000	2423.52	14541.12	P&M-09
		Tipper 5.5 cum capacity	hour	6.000	1010.00	6060.00	P&M-13
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	800.00	4800.00	P&M-002
		Smooth wheeled roller 8 -10 tonne weight	hour	6.000	803.00	4818.00	P&M-011
		c) Material					
		Bitumen @ 9.80 kg per 10 sqm	tonne	10.050	42271.00	424823.55	M-013
		Crushed stone chipping of 6.7 mm size defined as 100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	92.250	740.23	68286.22	M-038
		d) Overhead charges @ 0.055 on (a+b+c)				29183.36	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				55978.99	
		Cost for 10250 sqm = a+b+c+d+e				615768.92	
		Rate per sqm = (a+b+c+d+e)/10250				60.08	
					say	60.00	
		Note					
		Since seal coat is provided immediately over the bituminous layers, mechanical broom for clearing has not been catered.					
5.12		(ii) Case - II : Type B					
		Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen of suitable grade.					
		Unit = sqm					
		Taking output = 7858 sqm (47.16 cum)					
		a) Labour					
		Mate	day	0.160	314.67	50.35	L-12
		Mazdoor	day	4.000	300.36	1201.44	L-13
		b) Machinery					
		HMP of 75 tonnes/hour.	hour	2.000	25868.00	51736.00	P&M-47

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Electric Generator Set 250 KVA	hour	2.000	3690.00	7380.00	P&M-096
			Front end loader 1 cum bucket capacity	hour	2.000	900.00	1800.00	P&M-06
			Tipper 10 tonne capacity	tonne.km	104 x 'L'	2.68	278.72	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				27.87	
			Paver finisher hydrostatic with sensor attachment	hour	2.000	1500.00	3000.00	P&M-56
			Smooth wheeled 8-10 tonnes capacity	hour	2.000	803.00	1606.00	P&M-011
			c) Material					
			Bitumen@ 6.80 kg per 10 sqm	tonne	5.340	42271.00	225727.14	M-013
			Crushed stone chipping of 6.7 mm size defined as passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.06 cum per 10 sqm	cum	47.160	740.23	34909.25	M-038
			d) Overhead charges @ 0.055 on (a+b+c)				18024.42	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				34574.12	
			Cost for 7858 sqm = a+b+c+d+e				380315.31	
			Rate per sqm = (a+b+c+d+e)/7858				48.40	
						say	48.00	
		Note	Since seal coat is required to be provided over the premix carpet on the same day, out of the 6 working hours of the HMP, 4.00 hours are proposed to be utilised for the premix carpet and the balance 2.00 hours for the seal coat. Hence 2.00 hours have been considered for this case. This may be linked to rate analysis worked out under clause 511.					
5.13	514		Supply of Stone Aggregates for Pavement Courses					
			Supply of stone aggregates from approved sources conforming to the physical requirement, specified in the respective specified clauses, including royalties, fees rents, collection, transportation, stacking and testing and measured in cum as per clause 514.5					
			Competitive market rates to be ascertained. Alternatively, rates for stone crushing given in chapter 1 may be adopted, if found economical. In case for supply of aggregates at site are not available, nearest crusher site may be ascertained. Loading and un-loading charges and cost of carriage may be added to these rates to arrive at the cost at site.					
5.14	515		Mastic Asphalt					
			Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated finegrained hard stone chipping of 13.2 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces is not less than 100 °C, protruding 1 mm to 4 mm over mastic surface, all					
			Unit = sqm					
			Taking output = 35.00 sqm (0.87 cum) assuming a density of 2.3 tonnes/cum.-2 tonnes					
			a) Labour					
			Mate	day	0.440	314.67	138.45	L-12
			Mazdoor	day	10.000	300.36	3003.60	L-13
			Mazdoor skilled	day	1.000	414.80	414.80	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	0.060	360.00	21.60	P&M-53
			Air compressor 250 cfm	hour	0.060	293.76	17.63	P&M-032
			Mastic cooker 1 tonne capacity	hour	6.000	54.81	328.86	P&M-52
			Bitumen boiler 1500 litres capacity	hour	6.000	182.52	1095.12	P&M-035
			Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	168.75	168.75	P&M-72
			c) Material					
			Base mastic (without coarse aggregates) = 60 per cent					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Coarse aggregate (6.3mm to 13.2 mm) = 40 per cent .					
			Proportion of material required for mastic asphalt with coarse aggregates (based on mix design done by CRRRI for a specific case)					
			i) Bitumen 85/25 or 30/40 @ 10.2 per cent by weight of mix. $2 \times 10.2/100 = 0.204$	tonne	0.204	42271.00	8623.28	M-013
			ii) Fine aggregate passing 2.36mm and retained on 0.075mm sieve @ 31.9 per cent by weight of mix = $2 \times 31.9/100 = 0.638$ tonnes = $0.638/1.625 = 0.39$	cum	0.390	271.35	105.83	M-004
			iii) Lime stone dust filler with calcium content not less than 80 per cent by weight @ 17.92 per cent by weight of mix = $2 \times 17.92/100 = 0.36$	tonne	0.360	4703.60	1693.30	M-293
			iv) Coarse aggregates 6.3 mm to 13.2 mm @ 40 per cent by weight of mix = $2 \times 40/100 = 0.8$ MT = $0.8/1.456 = 0.55$	cum	0.550	886.68	487.67	M-011
			v) Pre-coated stone chips of 13.2 mm nominal size for skid resistance = $35 \times 0.005/10 = 0.018$	cum	0.018	795.00	14.31	M-151
			vi) Bitumen for coating of chips @ 2 per cent by weight = $0.018 \times 1.456 \times 2/100 = 0.0005$ MT = 0.5kg	kg	0.500	32233.12	16116.56	M-013
			d) Overhead charges @ 0.055 on (a+b+c)				1772.64	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3400.24	
			Cost for 35.00 sqm = a+b+c+d+e				37402.64	
			Rate per sqm = (a+b+c+d+e)/35				1068.65	
						say	<u>1069.00</u>	
		Note	1.The rates for 50 mm & 40 mm thick layers may be worked out on pro-rata basis.					
			2.Where tack coat is required to be provided before laying mastic asphalt, the same is required to be measured and paid separately.					
			3.The quantities of binder, filler and aggregates are for estimating purpose. Exact quantities shall be as per mix design.					
			4.This rate analysis is based on design made by CRRRI for a specific case and is meant for estimating purposes only. Actual design is required to be done for each case.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.15	516		Slurry Seal					
			Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface.					
		Case (i)	5 mm thickness					
			<i>Unit = sqm</i>					
			<i>Taking output = 16000 sqm (80 cum)</i>					
			<i>Taking density of 2.2 tonnes per cum</i>					
			weight of mix = 176 tonnes					
			a) Labour					
			Mate	day	0.240	314.67	75.52	L-12
			Mazdoor	day	6.000	300.36	1802.16	L-13
			b) Machinery					
			Mechanical broom	hour	6.000	360.00	2160.00	P&M-53
			Air compressor 250 cfm	hour	6.000	293.76	1762.56	P&M-032
			Mobile slurry seal equipment	hour	6.000	926.64	5559.84	P&M-55
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	1010.00	6060.00	P&M-13
			Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1143.72	6862.32	P&M-59
			Water tanker 6 KL capacity	hour	2.000	111.24	222.48	P&M-17
			c) Material					
			Residual Binder @ 11 per cent of mix 80 x 2.2 x 0.11	tonne	19.360	42199.00	816972.64	M-105
			Fine aggregate 4.75 mm and below 87 per cent of total mix. 80 x 2.2 x 0.87 = 153.12 tonnes. Taking density 1.5, = 153.12/1.5 = 102.08 cum	cum	102.080	476.60	48651.33	M-028
			Filler @ 2 per cent of total mix = 80 x 2.2 x 0.02	tonne	3.520	4703.60	16556.67	M-293
			Cost of water	KL	12.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				50164.70	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				96225.02	
			Cost for 16000 sqm = a+b+c+d+e				1058475.25	
			Rate per sqm = (a+b+c+d+e)/16000				66.15	
						say	66.00	
5.15		Case (ii)	3 mm thickness					
			<i>Unit = sqm</i>					
			<i>Taking output = 20000 sqm (60 cum)</i>					
			a) Labour					
			Mate	day	0.200	314.67	62.93	L-12
			Mazdoor	day	5.000	300.36	1501.80	L-13
			b) Machinery					
			Mechanical broom	hour	6.000	360.00	2160.00	P&M-53
			Air compressor 250 cfm	hour	6.000	293.76	1762.56	P&M-032
			Mobile slurry seal equipment	hour	6.000	926.64	5559.84	P&M-55
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler	hour	6.000	1010.00	6060.00	P&M-13
			Water tanker 6 KL capacity	hour	2.000	111.24	222.48	P&M-17
			c) Material					
			Residual Binder @ 13 per cent of mix = 60 x 2.2 x 0.13	tonne	17.160	42199.00	724134.84	M-105
			Fine aggregate 3 mm and below 85 per cent of total mix, 60x 2.2 x 0.85 = 112.2 tonnes. Taking density 1.5,	cum	74.800	498.00	37250.40	M-024
			Filler @ 2 per cent of total mix = 60x 2.2 x 0.02	tonne	2.640	4703.60	12417.50	M-293
			Cost of water	KL	12.000	0.00	0.00	M-1629

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Overhead charges @ 0.055 on (a+b+c)				43809.28	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				84034.16	
			Cost for 20000 sqm = a+b+c+d+e				924375.80	
			Rate per sqm = (a+b+c+d+e)/20000				46.22	
						say	46.00	
5.15		Case (iii)	1.5 mm thickness					
			Unit = sqm					
			Taking output = 24000 sqm (36 cum)					
			a) Labour					
			Mate	day	0.200	314.67	62.93	L-12
			Mazdoor	day	5.000	300.36	1501.80	L-13
			b) Machinery					
			Mechanical broom	hour	6.000	360.00	2160.00	P&M-53
			Air compressor 250 cfm	hour	6.000	293.76	1762.56	P&M-032
			Mobile slurry seal equipment	hour	6.000	926.64	5559.84	P&M-55
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	1010.00	6060.00	P&M-13
			Water tanker 6 KL capacity	hour	2.000	111.24	222.48	P&M-17
			c) Material					
			Residual Binder @ 16 per cent of mix, 36 x 2.2 x 0.16	tonne	12.670	42199.00	534661.33	M-105
			Fine aggregate 2.36 mm and below, 82 per cent of total mix, 36x 2.2 x 0.82 = 64.94 tonnes. Taking density 1.5	cum	43.300	498.00	21563.40	M-024
			Filler @ 2 per cent of total mix = 36x 2.2 x 0.02	tonne	1.580	4703.60	7431.69	M-293
			Cost of water	KL	12.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				32251.23	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				61863.73	
			Cost for 24000 sqm = a+b+c+d+e				680500.99	
			Rate per sqm = (a+b+c+d+e)/24000				28.35	
						say	28.00	
		Note	1. Tack coat, if required to be provided, before laying slurry seal may be measured and paid separately					
5.16	517		Recycling of Bituminous Pavement with Central Recycling Plant					
			Recycling pavement by cold milling of existing bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 per cent of the required quantity, hauling and stockpiling the reclaimed material near the central recycling plant after carrying out necessary checks and evaluation, adding fresh material including rejuvenators as required, mixing in a hot mix plant, transporting and laying at site and compacting to the required grade, level and thickness, all as specified in clause 517.					
			Unit = cum					
			Taking output = 120 cum (276 tonnes)					
			a) Labour					
			Mate	day	0.480	314.67	151.04	L-12
			Mazdoor	day	10.000	300.36	3003.60	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Cold milling machine @ 20 cum per hour	hour	6.000	855.36	5132.16	P&M-84
			Mechanical broom @ 1250 sqm per hour	hour	1.280	360.00	460.80	P&M-53
			Air compressor 250 cfm	hour	1.280	293.76	376.01	P&M-032
			Bitumen pressure distributor @ 1750 sqm per hour	hour	0.910	800.00	728.00	P&M-002
			Hot mix plant 100-120 TPH producing an average of 75 tonnes per hour	hour	3.000	30143.00	90429.00	P&M-46
			Electric generator set 250 KVA	hour	3.000	3690.00	11070.00	P&M-096

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Front end loader 1.00 cum bucket capacity	hour	3.000	900.00	2700.00	P&M-06
		Tipper 5.5 cum capacity	hour	18.000	1010.00	18180.00	P&M-13
		Smooth wheeled roller 8-10 tonnes	hour	3.00x0.65*	803.00	1565.85	P&M-011
		Vibratory roller 8 tonnes	hour	3.00x0.65*	600.00	1170.00	P&M-16
		Smooth wheeled tandem roller 6-8 tonnes	hour	3.00x0.65*	1250.00	2437.50	P&M-012
		c) Material					
		i) Bitumen					
		A bitumen content is 4.5 per cent bitumen weight of mix. For reclaimed material, fresh bitumen will be required to the extent of 60 per cent of normal requirement.					
		In a mix of 276 tonnes, 82.8 tonne is reclaimed and balance 193.2 tonne is fresh mix.					
		Bitumen required for reclaimed mix of 82.8 tonne @ 60 per cent = $82.8 \times 0.60 \times 0.04 = 1.99$	tonne	1.9872	42271.00	84000.93	M-013
		Bitumen required for fresh mix of 193.2 tonnes = $193.2 \times 0.04 = 7.73$	tonne	7.728	42271.00	326670.29	M-013
		ii) Aggregates					
		Percentage of mix requiring fresh aggregates - 70 per cent					
		Weight of fresh mix = $276 \times 0.70 = 193.2$ tonne					
		Weight of fresh aggregate in the mix = $193.2 \times 0.96 = 185.47$ tonne					
		Taking average density of 1.5 tonnes/cum, total volume of aggregate = 123.65 cum.					
		Size wise requirement of fresh aggregates					
		37.5 - 25 mm @ 23 per cent	cum	28.440	998.25	28390.23	M-037
		25 - 10 mm @ 15 per cent	cum	18.550	1153.28	21393.34	M-012
		10- 5 mm @ 20 per cent	cum	24.730	954.78	23611.71	M-010
		Below 5 mm @ 40 per cent	cum	49.460	476.60	23572.64	M-028
		Filler (cement) @ 2 per cent = 5.52tonnes of 276 tonne	tonne	5.520	5000.00	27600.00	M-015
		d) Overhead charges @ 0.055 on (a+b+c)				37041.00	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				71051.37	
		Cost for 120 cum of DBM = a+b+c+d+e				781565.07	
		Rate per cum = (a+b+c+d+e)/120				6513.04	
					say	6513.00	
		Note Although the total rolling time is only 4 hours as per norms, all the three rollers have to be available at site for 3 hours each to match with the output of re-cycling plant. To cater for their idling time, these have been multiplied with a factor of 0.65.					
5.17	518	Fog Spray					
		Providing and applying low viscosity bitumen emulsion for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing.					
		Unit = sqm					
		Taking output = 10500 sqm					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Mazdoor	day	3.000	300.36	901.08	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	360.00	2160.00	P&M-53
		Air compressor 250 cfm	hour	6.000	293.76	1762.56	P&M-032
		Bitumen emulsion pressure distributor @ 1750 sqm per hour	tonne	6.000	800.00	4800.00	P&M-002
		c) Material					
		Bitumen emulsion @ 0.75 kg per sqm	tonne	7.880	42199.00	332528.12	M-105
		d) Overhead charges @ 0.055 on (a+b+c)				18820.42	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				36100.99	
		Cost for 10500 sqm = a+b+c+d+e				397110.94	
		Rate per sqm = (a+b+c+d+e)/10500				37.82	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
					say	38.00	
		1.In case it is decided by the engineer to blind the fog spray, the following may be added					
		a) Labour					
		Mate	day	0.160	314.67	50.35	L-12
		Mazdoor for precoating of grit	day	4.000	300.36	1201.44	L-13
		b) Material					
		Crushed stone grit 3 mm size @ 3.75 kg per sqm	cum	26.250	516.21	13550.51	M-025
		Bitumen emulsion for precoating grit @ 2 per cent of grit, 39.38 x 0.02	tonne	0.790	42199.00	33337.21	M-105
		c) Overhead charges @ 0.055 on (a+b)				2647.67	
		d) Contractor's profit @ 0.1 on (a+b+c)				5078.72	
		Cost for 10500 sqm = a+b+c+d				55865.90	
		Rate per sqm = (a+b+c+d)/10500				5.32	
					say	5.30	
5.18	519	Bituminous Cold Mix (Including Gravel Emulsion)					
		Providing, laying and rolling of bituminous cold mix on prepared base consisting of a mixture of unheated mineral aggregate and emulsified or cutback bitumen, including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing to specified grades and levels.					
		Unit = cum					
		Taking output = 205 cum (450 tonne)					
		Case (i) Using bitumen emulsion and 9.5 mm or 13.2 mm size aggregate					
		Composition of mix (450 tonne) is assumed to be as under:-					
		Bitumen Emulsion 8 per cent	By weight of total mix				
		Filler 2 per cent					
		Total aggregates 90 per cent					
		Proportion of aggregates					
		19 mm to 9.5 mm 25 per cent					
		9.5 mm to 6 mm 29 per cent					
		6 mm to 0.075 mm 36 per cent					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor	day	16.000	300.36	4805.76	L-13
		Mazdoor skilled	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	1107.00	6642.00	P&M-92
		Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Paver finisher	hour	6.000	1500.00	9000.00	P&M-56
		Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1143.72	4460.51	P&M-59
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		Bitumen emulsion @ 8 per cent	tonne	36.000	42199.00	1519164.00	M-105
		Filler (lime) @ 2 per cent	tonne	9.000	4703.60	42332.40	M-293
		Aggregates size 19 to 9.5 mm - 450 x 0.25 x 1/1.5	cum	75.000	1330.60	99795.00	M-035
		Aggregates size 9.5 to 6 mm - 450 x 0.29 x 1/1.5	cum	87.000	954.78	83065.86	M-010
		Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	476.60	51472.80	M-028
		d) Overhead charges @ 0.055 on (a+b+c)				101778.50	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				195229.68	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cost for 205 cum = a+b+c+d+e				2147526.43	
			Rate per cum = (a+b+c+d+e)/205				10475.74	
						say	10476.00	
			(Applicable to cases I to IV)					
		Note	1.Density of aggregates has been assumed 1.5 gms/cc					
			2. Tack coat where provided will be measured and paid separately.					
			*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.18		Case (ii)	Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Bitumen Emulsion 8 per cent					
			Filler 2 per cent					
			Total aggregates 90 per cent					
			Proportion of aggregates					
			37.5 mm to 19 mm 25 per cent					
			19 mm to 6 mm 30 per cent					
			6 mm to 0.075 mm 35 per cent					
			a) Labour					
			Mate	day	0.840	314.67	264.32	L-12
			Mazdoor	day	16.000	300.36	4805.76	L-13
			Mazdoor skilled	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes 60-90 tonne per hour producing average output of 75 tonnes per hour	hour	6.000	1107.00	6642.00	P&M-92
			Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
			Paver finisher	hour	6.000	1500.00	9000.00	P&M-56
			Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1143.72	4460.51	P&M-59
			Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1250.00	4875.00	P&M-012
			c) Material					
			Bitumen emulsion @ 8 per cent	tonne	36.000	42199.00	1519164.00	M-105
			Filler (lime)@ 2 per cent	tonne	9.000	4703.60	42332.40	M-293
			Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	1066.23	79967.25	M-036
			Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	1098.00	98820.00	M-092
			Aggregates size 6 to 0.075 mm - 450 x 0.35 x 1/1.5	cum	105.000	476.60	50043.00	M-028
			d) Overhead charges @ 0.055 on (a+b+c)				101475.82	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				194649.07	
			Cost for 205 cum = a+b+c+d+e				2141139.72	
			Rate per cum = (a+b+c+d+e)/205				10444.58	
						say	10445.00	
		Note	1.Density of aggregates has been assumed 1.5 gms/cc					
			2. Tack coat where provided will be measured and paid separately.					
			*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.18		Case (iii)	Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Composition of mix (450 tonne) is assumed to be as under:-					
		Cutback bitumen 5 per cent					
		Filler (lime) 2 per cent					
		Total aggregates 93 per cent					
		Proportion of aggregates					
		19 mm to 9.5 mm 26 per cent					
		9.5 mm to 6 mm 31 per cent					
		6 mm to 0.075 mm 36 per cent					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor	day	16.000	300.36	4805.76	L-13
		Mazdoor skilled	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Drum mix plant for cold mixes 60-90 tonne per hour producing average output of 75 tonnes per hour	hour	6.000	1107.00	6642.00	P&M-92
		Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Paver finisher	hour	6.000	1500.00	9000.00	P&M-56
		Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1143.72	4460.51	P&M-59
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		Cutback bitumen @ 5 per cent	tonne	22.500	39272.00	883620.00	M-049
		Filler (lime)@ 2 per cent	tonne	9.000	4703.60	42332.40	M-293
		Aggregates size 19 to 9.5 mm - 450 x 0.26 x 1/1.5	cum	78.000	1330.60	103786.80	M-035
		Aggregates size 9.5 to 6 mm - 450 x 0.31 x 1/1.5	cum	93.000	954.78	88794.54	M-010
		Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	476.60	51472.80	M-028
		d) Overhead charges @ 0.055 on (a+b+c)				67358.21	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				129205.29	
		Cost for 205 cum = a+b+c+d+e				1421258.24	
		Rate per cum = (a+b+c+d+e)/205				6932.97	
					say	6933.00	
	Note	1.Density of aggregates has been assumed 1.5 gms/cc					
		2. Tack coat where provided will be measured and paid separately.					
		*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.18	Case (iv)	Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate					
		Composition of mix (450 tonne) is assumed to be as under:-					
		Cutback bitumen 5 per cent					
		Filler 2 per cent					
		Total aggregates 93 per cent					
		Proportion of aggregates					
		37.5 mm to 19 mm 25 per cent					
		19 mm to 6 mm 30 per cent					
		6 mm to 0.075 mm 38 per cent					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor	day	16.000	300.36	4805.76	L-13
		Mazdoor skilled	day	5.000	414.80	2074.00	L-15
		b) Machinery					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Drum mix plant for cold mixes 60-90 tonne per hour producing output of 75 tonnes per hour	hour	6.000	1107.00	6642.00	P&M-92
		Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Paver finisher	hour	6.000	1500.00	9000.00	P&M-56
		Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1143.72	4460.51	P&M-59
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		Cutback bitumen on @ 5 per cent	tonne	22.500	39272.00	883620.00	M-049
		Filler (lime)@ 2 per cent	tonne	9.000	4703.60	42332.40	M-293
		Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	1066.23	79967.25	M-036
		Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	1098.00	98820.00	M-092
		Aggregates size 6 to 0.075 mm - 450 x 0.38 x 1/1.5	cum	114.000	476.60	54332.40	M-028
		d) Overhead charges @ 0.055 on (a+b+c)				66756.81	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				128051.71	
		Cost for 205 cum = a+b+c+d+e				1408568.76	
		Rate per cum = (a+b+c+d+e)/205				6871.07	
					say	6871.00	
	Note	1.Density of aggregates has been assumed 1.5 gms/cc					
		2. Tack coat where provided will be measured and paid separately.					
		*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.19	520	Sand Asphalt Base Course					
		Providing, laying and rolling sand-asphalt base course composed of sand, mineral filler and bituminous binder on a prepared sub-grade or sub-base to the lines, levels, grades and cross sections as per the drawings including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing.					
		Unit = cum					
		Taking output = 205 cum (450 tonne)					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor	day	16.000	300.36	4805.76	L-13
		Mazdoor skilled	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Hot Mix Plant of appropriate capacity but not less than 75 tonnes/hour	hour	6.000	23197.00	139182.00	P&M-48
		Electric generator set 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Paver finisher	hour	6.000	1500.00	9000.00	P&M-56
		smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem rollers.	hour	6.00x0.65	1250.00	4875.00	P&M-012
		c) Material					
		Composition of mix (450 tonne) is assumed to be as under:-					
		Density 2.20 tonne per cum					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Weight 450 tonne					
			Bitumen 5 per cent					
			Filler 2 per cent					
			Sand of size 4.75 to 0.075 mm 93 per cent					
			Bitumen @ 5 per cent	tonne	22.500	42271.00	951097.50	M-013
			Filler (lime) @ 2 per cent	tonne	9.000	4703.60	42332.40	M-293
			Sand of size 4.75 to 0.075 mm - 450 x 0.93 x 1/1.5	cum	288.620	252.20	72789.96	M-001
			d) Overhead charges @ 0.055 on (a+b+c)				69341.76	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				133010.10	
			Cost for 205 cum = a+b+c+d+e				1463111.11	
			Rate per cum = (a+b+c+d+e)/205				7137.13	
						say	7137.00	
		Note	1. Tack coat will be measured and paid separately					
			2. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of this roller, their usage rates has been multiplied by a factor of 0.65					
5.20	521		Modified Binder					
			Supply of modified binder produced by mixing bitumen with modifier such as natural rubber or crumb rubber or any other polymer found compatible with bitumen and which allows properties given in clause 521.3 and IRC:SP: 53 blending of modifier with bitumen to be done either at the refinery or at central unit with all facilities by proper industrial process, is essential.					
			Unit = tonne					
			The use of modified binder is expected to result in an extended service life of bituminous pavements subject to heavy traffic loads in extreme climatic conditions, thus justifying the entire cost of adding modifiers/fibres. Other advantages include lower temperature susceptibility, higher resistance to aging, higher fatigue life, higher resistance to cracking and better adhesion between aggregates and binder.					
			Detailed information and inductive dose level on the use of polymer modified binder is available in IRC : SP-53 / 2002. A number of proprietary products are now available in the market. For such proprietary products, test reports and cost effectiveness should be the basis for their selection in road works.					
			The modifier, in the required quantity shall be blended at the refinery or at central unit with all facilities by proper industrial process, is essential. If supplied in drums it shall be agitated in melted condition with suitable device for achieving homogeneity.					
			Proposals to use glass fibre, polypropylene fibres or any other similar material in a bituminous mixture should be substantiated, complete with all details including test results, manufacturer's recommendations for addition or means of incorporating the fibres, homogeneously, without segregation, into the mixture.					
			Before agreeing to the use of a fibre, it should have been proved to be satisfactory in use under circumstances, similar to the work, elsewhere or it would have undergone appropriate performance trials. Documented evidence of use and trials of the fibre, in any country having conditions similar to Indian will be acceptable.					
			where information on use of trials is inadequate or lacking, trials may be required to be undertaken before agreeing to the use of the fibre.					
		Note	1. The modified binder is usually manufactured by specialised firms as a proprietary product. The rate for this product is required to be ascertained from the market.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			2.The specifications for various item of road works using polymer/rubber modified bitumens are same as those for penetration grade bitumen except those for any special conditions which the manufacturer may indicate.					
			3.The other controls during mixing, laying shall be same as specified in IRC - 14, 29, 94 and 95 for open graded premix carpet, bituminous concrete, DBM and SDBC respectively.					
			4.The temperature of mixing and rolling will be slightly higher than conventional bituminous mixes as indicated in Table 8 of IRC: SP: 53 - 2002.					
5.21	522		Crack Prevention Courses					
		Case (i)	Stress absorbing membrane (SAM) crack width less than 6 mm					
			Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width below 6 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 9 kg per 10 sqm and spreading 5.6 mm crushed stone aggregates @ 0.11 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.					
			Unit = sqm					
			Taking output = 10500 sqm					
			a) Labour					
			Mate	day	0.240	314.67	75.52	L-12
			Mazdoor	day	6.000	300.36	1802.16	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	360.00	2160.00	P&M-53
			Air compressor 250 cfm	hour	6.000	293.76	1762.56	P&M-032
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	800.00	4800.00	P&M-002
			Hydraulic Chip spreader	hour	6.000	2423.52	14541.12	P&M-09
			Smooth wheeled road roller 8-10 tonne	hour	6.000	803.00	4818.00	P&M-011
			c) Material					
			Modified binder	tonne	9.450	43171.00	407965.95	M-050
			Crushed stone aggregates 5.6 mm size	cum	105.000	740.23	77724.15	M-038
			d) Overhead charges @ 0.055 on (a+b+c)				28360.72	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				54401.02	
			Cost for 10500 sqm = a+b+c+d+e				598411.20	
			Rate per sqm = (a+b+c+d+e)/10500				56.99	
						say	57.00	
5.21		Case (ii)	Stress absorbing membrane (SAM) with crack width 6 mm to 9 mm					
			Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.					
			Unit = sqm					
			Taking output = 10500 sqm					
			a) Labour					
			Mate	day	0.240	314.67	75.52	L-12
			Mazdoor	day	6.000	300.36	1802.16	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	360.00	2160.00	P&M-53
			Air compressor 250 cfm capacity	hour	6.000	293.76	1762.56	P&M-032
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	800.00	4800.00	P&M-002
			Hydraulic Chip spreader	hour	6.000	2423.52	14541.12	P&M-09
			Smooth wheeled road roller 8-10 tonne	hour	6.000	803.00	4818.00	P&M-011
			c) Material					
			Modified binder	tonne	11.550	43171.00	498625.05	M-050

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Crushed stone chipping 11.2 mm size	cum	105.000	899.36	94432.80	M-039
			d) Overhead charges @ 0.055 on (a+b+c)				34265.95	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				65728.32	
			Cost for 10500 sqm = a+b+c+d+e				723011.47	
			Rate per sqm = (a+b+c+d+e)/10500				68.86	
						say	69.00	
5.21		Case (iii)	Stress absorbing membrane (SAM) crack width above 9 mm and cracked area above 50 per cent					
			Providing and laying a single coat of a stress absorbing membrane over a cracked road surface, with crack width above 9 mm and cracked area above 50 per cent after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.					
			Unit = sqm					
			Taking output = 10500 sqm					
			a) Labour					
			Mate	day	0.240	314.67	75.52	L-12
			Mazdoor	day	6.000	300.36	1802.16	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	360.00	2160.00	P&M-53
			Air compressor 250 cfm capacity	hour	6.000	293.76	1762.56	P&M-032
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	800.00	4800.00	P&M-002
			Hydraulic Chip spreader	hour	6.000	2423.52	14541.12	P&M-09
			Smooth wheeled road roller 8-10 tonne	hour	6.000	803.00	4818.00	P&M-011
			c) Material					
			Modified binder	tonne	15.750	43171.00	679943.25	M-050
			Crushed stone aggregates 11.2 mm size	cum	126.000	899.36	113319.36	M-039
			d) Overhead charges @ 0.055 on (a+b+c)				45322.84	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				86937.44	
			Cost for 10500 sqm = a+b+c+d+e				956311.85	
			Rate per sqm = (a+b+c+d+e)/10500				91.08	
						say	91.00	
		Note	In case 2nd coat is also required to be provided, material provided for the 2nd coat shall be as per table 500-47.					
5.21		Case(iv)	Case - IV : Bitumen impregnated geotextile					
			Providing and laying a bitumen impregnated geotextile layer after cleaning the road surface, geotextile conforming to requirements of clause 703.3, laid over a tack coat with 1.05 kg per sqm of paving grade bitumen 80 - 100 penetration and constructed to the requirement of clause 703.4.5					
			Unit = sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.560	314.67	176.22	L-12
			Mazdoor	day	12.000	300.36	3604.32	L-13
			Mazdoor skilled	day	2.000	414.80	829.60	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	360.00	1008.00	P&M-53
			Air compressor 250 cfm capacity	hour	2.800	293.76	822.53	P&M-032
			Bitumen pressure distributor @ 1750 sqm per hour	tonne	2.000	800.00	1600.00	P&M-002
			Pneumatic roller	hour	2.000	1143.72	2287.44	P&M-59
			c) Material					
			Paving grade bitumen of 80 - 100 penetration @ 1.05 kg per sqm	tonne	3.680	41471.00	152613.28	M-048
			Geotextile including 10 per cent for overlaps	sqm	3850.000	45.00	173250.00	M-123
			d) Overhead charges @ 0.055 on (a+b+c)				18490.53	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				35468.19	
			Cost for 3500 sqm = a+b+c+d+e				390150.10	
			Rate per sqm = (a+b+c+d+e)/3500				111.47	
						say	111.00	
		NOTE	As bitumen overlay construction shall follow closely the fabric placement on the same day, an output of 3500 sqm only has been considered for the analysis which will cover a length of 500 m, of 7 m wide carriageway. This can be conveniently overlaid by a bitumenious course in a day.					
5.22	519.3		Recipe Cold Mix					
			Providing and laying of premix of crushed stone aggregates and emulsion binder, mixed in a batch type cold mixing plant, laid over prepared surface, by paver finisher, rolled with a pneumatic tyred roller initially and finished with a smooth steel wheel roller, all as per clause 519.3					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
		Case(i)	75 mm thickness					
			a) Labour					
			Mate	day	1.000	314.67	314.67	L-12
			Mazdoor	day	12.000	300.36	3604.32	L-13
			Mazdoor skilled	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	2279.88	13679.28	P&M-79
			Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
			Front end loader 1 cum capacity	hour	6.000	900.00	5400.00	P&M-06
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
			Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
			Pneumatic tyred roller12-15 tonnes.	hour	6.00x0.65*	1143.72	4460.51	P&M-59
			Smooth wheeled steel roller6-8 tonnes.	hour	6.00x0.65*	803.00	3131.70	P&M-011
			Water tanker6 KL capacity	hour	1.000	111.24	111.24	P&M-17
			c) Material					
			Bitumen emulsion @ 45 litres per tonne	tonne	20.250	42199.00	854529.75	M-105
			Crushed stone aggregates 40 mm nominal size	cum	297.000	999.65	296896.05	M-042
			Cost of water	KL	6.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				66570.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				127693.84	
			Cost for 205 sqm = a+b+c+d+e				1404632.20	
			Rate per sqm = (a+b+c+d+e)/205				6851.86	
						say	6852.00	
		Note	(Case I to III)					
			1. These mixes are considered suitable for minor repair work and temporary road surface improvement.					
			2. In case concrete mixtures are required to be used for mixing, a number of these will be needed to match the capacity of road rollers.					
			3. Tack coat, where provided, will be measured and paid separately.					
			*4.Both the rollers have to be available at site to match with the output of batch mixing plant and paver finisher. A multiplying factor of 0.65 has been adopted to cater for the idling period of road rollers.					
5.22		Case(ii)	40 mm thickness					
			a) Labour					
			Mate	day	1.000	314.67	314.67	L-12
			Mazdoor	day	12.000	300.36	3604.32	L-13
			Mazdoor skilled	day	5.000	414.80	2074.00	L-15

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	2279.88	13679.28	P&M-79
			Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
			Front end loader 1 cum capacity	hour	6.000	900.00	5400.00	P&M-06
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
			Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
			Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1143.72	4460.51	P&M-59
			Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	803.00	3131.70	P&M-011
			Water tanker 6 KL capacity	hour	1.000	111.24	111.24	P&M-17
			c) Material					
			Bitumen emulsion @ 70 litres per tonne	tonne	31.500	42199.00	1329268.50	M-105
			Crushed stone aggregates 14 mm nominal size	cum	287.000	999.25	286784.75	M-040
			Cost of water	KL	6.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				92124.76	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				176712.03	
			Cost for 205 sqm = a+b+c+d+e				1943832.36	
			Rate per sqm = (a+b+c+d+e)/205				9482.11	
						say	9482.00	
5.22		Case(iii)	25 mm thickness					
			a) Labour					
			Mate	day	1.000	314.67	314.67	L-12
			Mazdoor	day	12.000	300.36	3604.32	L-13
			Mazdoor skilled	day	5.000	414.80	2074.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	2279.88	13679.28	P&M-79
			Electric generator 125 KVA	hour	6.000	2640.00	15840.00	P&M-007
			Front end loader 1 cum capacity	hour	6.000	900.00	5400.00	P&M-06
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
			Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
			Pneumatic tyred roller	hour	6.00x0.65*	1143.72	4460.51	P&M-59
			Smooth wheeled steel roller	hour	6.00x0.65*	803.00	3131.70	P&M-011
			Water tanker 6 KL capacity	hour	1.000	111.24	111.24	P&M-17
			c) Material					
			Bitumen emulsion @ 85 litres per tonne	tonne	38.250	42199.00	1614111.75	M-105
			Crushed stone aggregates 6 mm nominal size	cum	270.000	740.23	199862.10	M-038
			Cost of water	KL	6.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				103010.39	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				197592.66	
			Cost for 205 sqm = a+b+c+d+e				2173519.21	
			Rate per sqm = (a+b+c+d+e)/205				10602.53	
						say	10603.00	
5.8 A	509		Bituminous Concrete with Modified Graded Bitumen					
			Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Unit = cum					
		Taking output = 191 cum (450 tonnes)					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	300.36	4805.76	L-13
		Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
		Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead = 1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		i) Bitumen@ 5 per cent of weight of mix	tonne	22.500	43171.00	971347.50	M-050
		ii) Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 22.5 tonnes					
		Weight of aggregate = 450 -22.50 = 427.50 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 285 cum					
		* Grading - I-19 mm (Nominal Size)					
		20 - 10 mm 35 per cent	cum	99.750	1330.60	132727.35	M-035
		10 - 5 mm 23 per cent	cum	65.550	954.78	62585.83	M-010
		5 mm and below 40 per cent	cum	114.000	476.60	54332.40	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		or					
		Grading - II-13 mm (Nominal Size)					
		13.2 - 10 mm 30 per cent	cum	85.500	1162.00	99351.00	M-034
		10 - 5 mm 25 per cent	cum	71.250	954.78	68028.08	M-010
		5 mm and below 43 per cent	cum	122.550	476.60	58407.33	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		*Any one of the alternative may be adopted as per approved design					
	(i)	for Grading-I (13 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				80965.69	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				155306.92	
		Cost for 191 cum = a+b+c+d+e				1708376.10	
		Rate per cum = (a+b+c+d+e)/191				8944.38	
					say	8944.00	
5.8 A	(ii)	for Grading-II (10 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				79653.44	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				152789.78	
		Cost for 191 cum = a+b+c+d+e				1680687.53	
		Rate per cum = (a+b+c+d+e)/191 (For Grading-II)				8799.41	
					say	8799.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.8 B		Bituminous Concrete (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects) with Bulk VG30 Bitumen.					
		Unit = cum					
		Taking output = 191 cum (450 tonnes)					
		a) Labour					
		Mate	day	0.840	314.67	264.32	L-12
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	300.36	4805.76	L-13
		Skilled mazdoor for checking line & levels	day	5.000	414.80	2074.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	25868.00	155208.00	P&M-47
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	1500.00	9000.00	P&M-56
		Generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Tipper 10 tonne capacity	tonne.km	450 x L	2.68	1206.00	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				120.60	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	803.00	3131.70	P&M-011
		Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	600.00	2340.00	P&M-16
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1250.00	4875.00	P&M-012
		c) Material					
		i) Bitumen@ 5 per cent of weight of mix	tonne	22.500	35450.00	797625.00	M-192
		ii) Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 22.5 tonnes					
		Weight of aggregate = 450 -22.50 = 427.50 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 285 cum					
		* Grading - I-19 mm (Nominal Size)					
		20 - 10 mm 35 per cent	cum	99.750	1330.60	132727.35	M-035
		10 - 5 mm 23 per cent	cum	65.550	954.78	62585.83	M-010
		5 mm and below 40 per cent	cum	114.000	476.60	54332.40	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		or					
		Grading - II-13 mm (Nominal Size)					
		13.2 - 10 mm 30 per cent	cum	85.500	1162.00	99351.00	M-034
		10 - 5 mm 25 per cent	cum	71.250	954.78	68028.08	M-010
		5 mm and below 43 per cent	cum	122.550	476.60	58407.33	M-028
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	4703.60	40545.03	M-293
		*Any one of the alternative may be adopted as per approved design					
	(i)	for Grading-I (13 mm nominal size)					
		d) Overhead charges @ 0.055 on (a+b+c)				71410.95	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				136979.19	
		Cost for 191 cum = a+b+c+d+e				1506771.14	
		Rate per cum = (a+b+c+d+e)/191				7888.85	
					say	7889.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(ii)	for Grading-II (10 mm nominal size)					
			d) Overhead charges @ 0.055 on (a+b+c)				70098.70	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				134462.05	
			Cost for 191 cum = a+b+c+d+e				1479082.57	
			Rate per cum = (a+b+c+d+e)/191 (For Grading-II)				7743.89	
						say	<u>7744.00</u>	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case BC is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.					
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be amended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e.. excluding the weight of bitumen. The weight of filler will also be 2 per cent by weight of dry aggregates.					

CHAPTER- 6
CEMENT CONCRETE PAVEMENTS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
6.1	601	Dry Lean Cement Concrete Sub- base					
		Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 t capacity roller.					
		Unit = cum					
		Taking output = 450 cum (990 tonne)					
		a) Labour					
		Mate	day	1.120	314.67	352.43	L-12
		Mazdoor skilled	day	6.000	414.80	2488.80	L-15
		Mazdoor	day	22.000	300.36	6607.92	L-13
		b) Machinery					
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	2052.00	12312.00	P&M-83
		Electric generator 100 KVA	hour	6.000	1925.00	11550.00	P&M-095
		Paver with electronic sensor	hour	6.000	1500.00	9000.00	P&M-56
		Vibratory roller 8-10 t capacity	hour	8.000	600.00	4800.00	P&M-16
		Water tanker 6 KL capacity	hour	8.000	111.24	889.92	P&M-17
		Tipper	tonne.km	990 x L	2.68	2653.20	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				265.32	
		c) Material					
		Crushed stone coarse aggregate of 25 mm and 12.5 mm nominal sizes graded as per table 600-1 @ 0.90 cum/cum of concrete conforming to clause 602.2.4.	cum	405.000	1049.00	424845.00	M-040 and M-093
		Coarse Sand as per IS: 383 @ 0.45 cum/cum of concrete	cum	203.000	252.20	51196.60	M-001
		Cement @ 150 kg/cum of concrete	tonne	67.500	5000.00	337500.00	M-015
		Cost of water	KL	48.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				47842.37	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				91770.36	
		Cost for 450 cum = a+b+c+d+e				1009473.91	
		Rate per cum = (a+b+c+d+e)/450				2243.28	
					say	2243.00	
		Note					
		Quantity provided for aggregate is for estimating purpose. Exact quantity shall be as per mix design.					
6.2	602	Cement Concrete Pavement					
		Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per					
		Unit = cum					
		Taking output = 1050 cum (2415 tonne)					
		a) Labour					
		Mate	day	2.000	314.67	629.34	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor skilled	day	15.000	414.80	6222.00	L-15
		Mazdoor	day	35.000	300.36	10512.60	L-13
		b) Machinery					
		Road Sweeper @ 1250 sqm per hour	hour	2.800	360.00	1008.00	P&M-53
		Front end loader 1 cum bucket capacity	hour	18.000	900.00	16200.00	P&M-06
		Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6.000	4787.64	28725.84	P&M-82
		Electric generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
		Slip form paver with electronic sensor	hour	6.000	1478.40	8870.40	P&M-036
		Water tanker 6 KL capacity	hour	36.000	111.24	4004.64	P&M-17
		Transit truck agitator 5 cum capacity.	tonne.km	2415xL	4.32	10432.80	Lead =1 km & P&M-69
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				1043.28	
		Concrete joint cutting machine .	hour	12.000	214.92	2579.04	P&M-18
		Texturing machine .	hour	12.000	71.50	858.00	P&M-101
		c) Material					
		Crushed stone coarse aggregates of 25mm and 12.5mm nominal size @ 0.90 cum/cum of concrete conforming to clause 602.2.4. .	cum	945.000	1049.00	991305.00	M-040 and M-093
		Sand as per IS: 383 and conforming to clause 602.2.4 @ 0.45 cum/cum of concrete	cum	473.000	252.20	119290.60	M-001
		Cement 43 grade @ 400 kg/cum of concrete	tonne	414.000	5000.00	2070000.00	M-015
		32 mm mild steel dowel bars of grade S 240	tonne	9.450	44000.00	415800.00	M-062
		16 mm deformed steel tie bars of grade S 415	tonne	1.170	55375.00	64788.75	M-051
		Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	10.81	39726.75	M-072
		Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	16.330	400.00	6532.00	M-150
		Joint sealant	kg	875.000	20.00	17500.00	M-135
		Sealant primer	kg	116.670	116.35	13574.55	M-113
		Plastic sheath, 1.25 mm thick for dowel bars	sqm	46.670	14.68	685.12	M-147
		Curing compound	liter	1850.000	38.00	70300.00	M-055
		Super plastisizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	36.00	74520.00	M-076
		Cost of water	KL	216.000	0.00	0.00	M-1629
		Add 1 per cent of material for cost of miscellaneous materials like tarpauline, Hessian cloth, metal cap, cotton / compressible sponge and cradle for dowel bars, work bridges for men to approach concrete surface without walking over it, cutting blades and bites, minor equipments like scabbling machine, threads, ropes, guide wires and any other unforeseen items				38840.23	
		d) Overhead charges @ 0.055 on (a+b+c)				221984.89	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				425807.38	
		Cost for 1050cum = a+b+c+d+e				4683881.21	
		Rate per cum = (a+b+c+d+e)/1050				4460.84	
					say	4461.00	
		Note	The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.				
6.3	603	Rolled Cement Concrete Base					
		Construction of rolled cement concrete base course with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm with minimum, aggregate cement ratio 15:1 and minimum cement content of 200 kg/cum, aggregate gradation to be as per table 600-4 after blending, mixing in batching plant at optimum moisture content, transporting to site, laying with a paver with electronic sensor, compacting with 8-10 tonnes smooth wheeled vibratory roller to achieve, the designed flexural strength, finishing and curing.					
		Unit = cum					
		Taking output = 450 cum (990 tonne)					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	1.200	314.67	377.60	L-12
		Mazdoor skilled	day	7.000	414.80	2903.60	L-15
		Mazdoor	day	23.000	300.36	6908.28	L-13
		b) Machinery					
		Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
		Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	2052.00	12312.00	P&M-83
		Electric generator 100 KVA	hour	6.000	1925.00	11550.00	P&M-095
		Paver with electronic sensor @ 75 cum/hr.	hour	6.000	1500.00	9000.00	P&M-56
		Vibratory roller 8-10 t capacity	hour	8.000	600.00	4800.00	P&M-16
		Water tanker with 5 km lead 6 KL capacity	hour	8.000	111.24	889.92	P&M-17
		Tipper	tonne.km	990xL	2.68	2653.20	Lead =1 km & P&M-67
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				265.32	
		c) Material					
		Crushed stone coarse aggregates of 25mm and 12.5mm nominal size @ 0.90 cum/cum of concrete conforming to clause 602.2.3.	cum	405.000	1049.00	424845.00	M-040 and M-093
		Sand as per IS: 383 and conforming to clause 602.2.3 @ 0.45 cum/cum of concrete	cum	203.000	252.20	51196.60	M-001
		Cement @ 200 kg/cum of concrete	tonne	90.000	5000.00	450000.00	M-015
		Cost of water	KL	48.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				54070.58	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				103717.21	
		Cost for 450cum = a+b+c+d+e				1140889.32	
		Rate per cum = (a+b+c+d+e)/450				2535.31	
					say	2535.00	
	Note	The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.					
6.4	New	Transition Section between Rigid and Flexible Pavement					
		Due to change in the properties of materials and type of construction, a gradual changeover from rigid pavement to flexible pavement is desirable to avoid any damage at the butting joint. After provision of an expansion joint in the cement concrete slab, the thickness of slab should be tapered to 10 cm over a length of 3 m towards the flexible pavement. The deficiency of thickness caused due to tapering of the slab should be made up by the asphaltic layers.					
		The quantities of items should be worked out based on the approved design and drawings and priced as per rates given under respective clauses for cement concrete and asphaltic work.					
6.5	Suggestive	Construction of Base/Sub-Base of Pavement with Lean Concrete - Flyash.					
		Construction of Base/sub-base using cement, sand, fly ash and coarse aggregates proportioned as per table 4 of IRC: 74/1979 and with water content ratio, slump and compressive strength as defined in the said table, mix prepared in a batching and mixing plant and compacted with a vibratory roller 8-10 tonnes capacity within the time limit laid down vide clause 7.6.3 of IRC: 74-1979, construction joints properly formed at the end of day's work, cured for 14 days, all as specified in IRC: 74-1979 and as per approved plans					
		Unit = cum					
		Taking output = 450 cum (990 tonne)					
		a) Labour					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mate	day	1.120	314.67	352.43	L-12
			Mazdoor skilled	day	6.000	414.80	2488.80	L-15
			Mazdoor	day	22.000	300.36	6607.92	L-13
			b) Machinery					
			Front end loader 1 cum bucket capacity	hour	6.000	900.00	5400.00	P&M-06
			Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	2052.00	12312.00	P&M-83
			Electric generator 100 KVA	hour	6.000	1925.00	11550.00	P&M-095
			Paver finisher with electronic sensor	hour	6.000	1500.00	9000.00	P&M-56
			Vibratory roller 8-10 t capacity	hour	8.000	600.00	4800.00	P&M-16
			Water tanker 6 KL capacity	hour	8.000	111.24	889.92	P&M-17
			Tipper 10 T Capacity	tonne.km	990 x L	2.68	2653.20	Lead =1 km & P&M-67
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				265.32	
			c) Material					
			Crushed stone coarse aggregate of 40 mm nominal size @ 0.90 cum/cum of concrete conforming to table 2 of IRC: 74-1979.	cum	405.000	999.65	404858.25	M-042
			Coarse Sand as per IS: 383 - 1970	cum	110.960	252.20	27984.11	M-001
			Cement @ 150 kg/cum of concrete	tonne	67.500	5000.00	337500.00	M-015
			Fly ash conforming to IS: 3812 (Part II)	cum	91.540	0.00	0.00	M-080
			(Total fine aggregates = 450 x 0.45 = 202.50 cum To be divided in ratio of 2 sand : 1.65 flyash. Refer table 4 of IRC: 74-1979).					
			d) Overhead charges @ 0.055 on (a+b+c)				45466.41	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				87212.84	
			Cost for 450cum = a+b+c+d+e				959341.20	
			Rate per cum = (a+b+c+d+e)/450				2131.87	
						say	<u>2132.00</u>	
		Note	1. Depending upon approved designs, crushed stone aggregates of nominal size 20mm can also be used as per gradation given in table 2 of IRC: 74-1979.					
			2. The ratio of specific gravities of fly ash and sand has been assumed to be 0.827.					
			3. The quantities of materials given in the analyses are for estimating purposes. Actual quantities shall be as per job mix formula.					
			4. Construction procedure as laid down in clause, of IRC: 74-1979 shall be followed.					
6.6	Suggestive		Cement - Flyash Concrete Pavement.					
			Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, replacing cement by fly ash to the extent of 15 per cent and sand by 10 per cent, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per					
			Unit = cum					
			Taking output = 1050 cum (2415 tonne)					
			a) Labour					
			Mate	day	2.000	314.67	629.34	L-12
			Mazdoor skilled	day	15.000	414.80	6222.00	L-15
			Mazdoor	day	35.000	300.36	10512.60	L-13
			b) Machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Road Sweeper @ 1250 sqm per hour	hour	2.800	360.00	1008.00	P&M-53
			Front end loader 1 cum bucket capacity	hour	18.000	900.00	16200.00	P&M-06
			Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6.000	4787.64	28725.84	P&M-82
			Electric generator 250 KVA	hour	6.000	3690.00	22140.00	P&M-096
			Slip form paver with electronic sensor	hour	6.000	1478.40	8870.40	P&M-036
			Water tanker 6 KL capacity	hour	36.000	111.24	4004.64	P&M-17
			Transit truck agitator 5 cum capacity.	tonne.km	2415xL	4.32	10432.80	P&M-69 Lead= 1 km
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				1043.28	
			Concrete joint cutting machine .	hour	12.000	214.92	2579.04	P&M-18
			Texturing machine .	hour	12.000	71.50	858.00	P&M-101
			c) Material					
			Crushed stone coarse aggregates of 25mm and 12.5mm nominal size @ 0.90 cum/cum of concrete conforming to clause 602.2.4.	cum	945.000	1049.00	991305.00	M-040 and M-093
			Sand as per IS: 383 and conforming to clause 602.2.4	cum	425.000	252.20	107185.00	M-001
			Cement 43 grade	tonne	357.000	5000.00	1785000.00	M-015
			Fly ash conforming to IS: 3812-1966 (Part-I)	tonne	109.000	0.00	0.00	M-080
			32 mm mild steel dowel bars of grade S 240	tonne	9.450	44000.00	415800.00	M-062
			16 mm deformed steel tie bars of grade S 415	tonne	1.170	55375.00	64788.75	M-051
			Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	10.81	39726.75	M-072
			Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	16.330	400.00	6532.00	M-150
			Joint sealant	kg	875.000	20.00	17500.00	M-135
			Sealant primer	kg	116.670	116.35	13574.55	M-113
			Plastic sheath, 1.25 mm thick for dowel bars	sqm	46.670	14.68	685.12	M-147
			Curing compound	liter	1850.000	38.00	70300.00	M-055
			Super plasticizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	36.00	74520.00	M-076
			Cost of water	KL	216.000	0.00	0.00	M-1629
			Add 1 per cent of material for cost of miscellaneous materials like tarpauline, Hessian cloth, metal cap, cotton / compressible sponge and cradle for dowel bars, work bridges for men to approach concrete surface without walking over it, cutting blades and bites, minor equipments like scabbling machine, threads, ropes, guide wires and any other unforeseen items				35869.17	
			d) Overhead charges @ 0.055 on (a+b+c)				205480.68	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				394149.30	
			Cost for 1050cum = a+b+c+d+e				4335642.25	
			Rate per cum = (a+b+c+d+e)/1050				4129.18	
						say	4129.00	
		Note	1.The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.					
			2.IRC: 68-1976 may be referred for guidelines on the design of cement-fly ash concrete for rigid pavement construction.					
			*Calculation of cement, sand and fly ash.					
			Cement @ 400 kg/cum = 1050 x 400 = 420 tonnes. 15 per cent of cement to be replaced by fly ash = 63 tonnes. Balance cement = 357 tonnes. Quantity of fly ash = 63 x specific gravity of fly ash /specific gravity of cement = 63 x 2.25/3.15 = 45 tonnes.					
			Sand @ 0.45 cum / cum of concrete = 1050 x 0.45 = 472.50 x 1.6 = 756 tonnes.10 per cent to be replaced by flyash. Balance sand = 756 x 0.9 = 680.4 tonnes = 680.4 / 1.6 = 425 cum. Quantity of flyash = (756-680.4) x specific gravity of fly ash/specific gravity of sand = 76.4 x 2.25 / 2.687 = 63.97 tonnes (say 64 tonnes)					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Fly ash Total fly ash = 45 + 64 = 109 tonnes.					

CHAPTER-7
GEOSYNTHETICS AND REINFORCED EARTH

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
7.1	702	Sub-Surface Drain with Geotextiles					
		Construction of sub surface drain 200 mm dia using geotextiles treated with carbon black with physical properties as given in clause 702.2.3 formed in to a stable network and a planar geocomposite structure, joints wrapped with geotextile to prevent ingress of soil, all as per clause 702 and approved drawings including excavation and backfilling					
		Unit = Running metre					
		Taking output = one metre					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor skilled	day	0.250	414.80	103.70	L-15
		Mazdoor	day	0.500	300.36	150.18	L-13
		b) Material					
		Geonets, geomembrane and geotextile to make planar geocomposite stable network for sub surface drain including wrapping of joints with 160 mm over lapping with geotextile .					
		Geonets	sqm	1.000	91.68	91.68	M-122
		Geomembrane	sqm	1.000	91.68	91.68	M-121
		Geotextile	sqm	2.000	45.00	90.00	M-123
		Add 2 per cent cost of material for miscellaneous items like synthetic cord				5.47	
		c) Overhead charges @ 0.055 on (a+b)				29.99	
		d) Contractor's profit @ 0.1 on (a+b+c)				57.53	
		Rate per metre = a+b+c+d				632.81	
					say	633.00	
		Note Surplus excavated material to be used at site. Hence seprate cost for disposal not added.					
7.2	702.4	Narrow Filter Sub-Surface Drain					
		Construction of a narrow filter sub- surface drain consisting of porous or perforated pipe laid in narrow trench surrounded by a geotextile filter fabric, with a minimum of 450 mm overlap of fabric and installed as per clause 702.3 and 309.3.5 including excavation and backfilling					
		Unit = Running metre length					
		Taking output = one metre					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor skilled	day	0.250	414.80	103.70	L-15
		Mazdoor	day	0.500	300.36	150.18	L-13
		b) Material					
		Perforated geosynthetic pipe 150 mm dia	metre	1.000	26.40	26.40	M-143
		Geotextile filter fabric	sqm	1.250	45.00	56.25	M-124
		Add 2 per cent cost of material for miscellaneous item like synthetic cord				1.65	
		c) Overhead charges @ 0.055 on (a+b)				19.29	
		d) Contractor's profit @ 0.1 on (a+b+c)				37.01	
		Rate per metre = a+b+c+d				407.07	
					say	407.00	
		Note Surplus excavated material to be used at site. Hence Separate cost for disposal not added.					
7.3	703	Laying Paving Fabric Beneath a Pavement Overlay					
		Providing and laying paving fabric with physical requirements as per table 704-2 over a tack coat of paving grade Bitumen 80-100 penetration, laid at the rate of 1 kg per sqm over thoroughly cleaned and repaired surface to provide a water resistant membrane and crack retarding layer. Paving fabric to be free of wrinkling and folding and to be laid before cooling of tack coat, brooming and rolling of surface with pneumatic roller to maximise paving fabric contact with pavement surface					
		Unit = sqm					
		Taking output = 2800 sqm					
		a) Labour					
		Mate	day	0.800	314.67	251.74	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	day	20.000	300.36	6007.20	L-13
		b) Machinery					
		Road sweeper 1250 sqm per hour	hour	2.240	360.00	806.40	P&M-53
		Pneumatic roller 14 tonnes 2000 sqm per hour	hour	1.400	1143.72	1601.21	P&M-59
		Bitumen pressure distributor 1750 sqm per hour	hour	1.680	800.00	1344.00	P&M-002
		c) Material					
		Paving Fabric	sqm	2940.000	67.55	198597.00	M-142
		Paving Bitumen 80-100	tonne	2.800	41471.00	116118.80	M-048
		c) Overhead charges @ 0.055 on (a+b)				17859.95	
		d) Contractor's profit @ 0.1 on (a+b+c)				34258.63	
		Cost for 2800 sqm = a+b+c+d+e				376844.92	
		Rate per sqm =(a+b+c+d+e)/2800				134.59	
					say	135.00	
7.4	704	Laying Boulder Apron in Crates of Synthetic Geogrids					
		Providing, preparing and laying of geogrid crated apron 1 m x 5 m, 600 mm thick including excavation and backfilling with baffles at 1 metre interval, made with geogrids having characteristics as per clause 704.2, joining sides with connectors/ring staples, top corners to be tie tensioned, placing of suitable cross interval ties in layers of 300 mm connecting opposite side with lateral braces and tied with polymer braids to avoid bulging, constructed as per clause 704.3. filled with stone with minimum size of 200 mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundation recess in case of sloping ground and laid over a layer of geotextile to prevent migration of fines, all as per clause 704 and laid as per clause 2503.3 and approved design.					
		Unit = cum					
		Taking output = 3.00 cum					
		a) Labour					
		Mate	day	0.060	314.67	18.88	L-12
		Mazdoor skilled	day	0.500	414.80	207.40	L-15
		Mazdoor	day	1.500	300.36	450.54	L-13
		b) Material					
		Geo grids	sqm	21.000	88.42	1856.82	M-120
		Connectors/ Staples	each	50.000	7.44	372.00	M-108
		Polymer braids	metre	20.000	15.00	300.00	M-149
		Stones with minimum size of 200 mm	cum	3.450	445.00	1535.25	M-018
		Stones spall for filling voids	cum	0.450	574.90	258.71	M-019
		c) Overhead charges @ 0.055 on (a+b)				274.98	
		d) Contractor's profit @ 0.1 on (a+b+c)				527.46	
		Cost for 3 cum = a+b+c+d				5802.03	
		Rate per cum = (a+b+c+d)/ 3				446.31	
					say	446.00	
7.5	3100	Reinforced Earth Structures					
		Reinforced earth Structures have four main components as under:					
		a) Excavation for foundation, foundation concrete and cement concrete grooved seating in the foundation for facing elements (facia material).					
		b) Facia material and its placement.					
		c) Assembling, joining with facing elements and laying of the reinforcing elements.					
		d) Earth fill with granular material which is to be retained by the wall.					
		Each component is analysed separately as under:					
		considering Average height of wall = 8 m.					
7.5	3102	(i) Assembling, joining and laying of reinforcing elements.					
		A With reinforcing element of steel / Aluminium strips / polymeric strips.					
		Unit = Running Metre					
		Taking Output = 450 m					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.360	314.67	113.28	L-12
		Mazdoor	day	6.000	300.36	1802.16	L-13
		Mazdoor skilled	day	3.000	414.80	1244.40	L-15
		b) Material					
		@ Reinforcement strips 60 mm wide 5 mm thick as per clause 3102.					
		1.Galvanised carbon steel strips	metre	450*1.1	514.18	254519.10	M-159
		or					
		2.Copper Strips	metre	450*1.1	514.18	254519.10	M-158
		or					
		3.Aluminium Strips	metre	450*1.1	265.38	131363.10	M-162
		or					
		4.Stainless steel strips	metre	450*1.1	253.74	125601.30	M-161
		or					
		5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips	metre	450*1.1	514.18	254519.10	M-160
		@ Any one of the above alternative may be adopted as per approved design.					
		Add 10 per cent of the cost of reinforcing strip towards accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia pannels, overlaps, heat bonding or extension.					
	Type 1	1.Galvanised carbon steel strips					
		c) Overhead charges @ 0.055 on (a+b)				14172.34	
		d) Contractor's profit @ 0.1 on (a+b+c)				25767.89	
		Cost of 450 m = a+b+c+d				297619.18	
		Rate per metre =(a+b+c+d)/450				661.38	
					say	<u>661.00</u>	
	Type 2	2.Copper Strips					
		c) Overhead charges @ 0.055 on (a+b)				14172.34	
		d) Contractor's profit @ 0.1 on (a+b+c)				25767.89	
		Cost of 450 m = a+b+c+d				297619.18	
		Rate per metre =(a+b+c+d)/450				661.38	
					say	<u>661.00</u>	
	Type 3	3.Aluminium Strips					
		c) Overhead charges @ 0.055 on (a+b)				7398.76	
		d) Contractor's profit @ 0.1 on (a+b+c)				13452.29	
		Cost of 450 m = a+b+c+d				155374.00	
		Rate per metre =(a+b+c+d)/450				345.28	
					say	<u>345.00</u>	
	Type 4	4.Stainless steel strips					
		c) Overhead charges @ 0.055 on (a+b)				7081.86	
		d) Contractor's profit @ 0.1 on (a+b+c)				12876.11	
		Cost of 450 m = a+b+c+d				148719.12	
		Rate per metre =(a+b+c+d)/450				330.49	
					say	<u>330.00</u>	
	Type 5	5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips					
		c) Overhead charges @ 0.055 on (a+b)				14172.34	
		d) Contractor's profit @ 0.1 on (a+b+c)				25767.89	
		Cost of 450 m = a+b+c+d				297619.18	
		Rate per metre =(a+b+c+d)/450				661.38	
					say	<u>661.00</u>	
7.5(i)	B	With reinforcing elements of synthetic geogrids					
		Unit = sqm					
		Taking output = 300 sqm					
		a) Labour					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mate	day	0.360	314.67	113.28	L-12
			Mazdoor	day	6.000	300.36	1802.16	L-13
			Mazdoor skilled	day	3.000	414.80	1244.40	L-15
			b) Material					
			Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	300.000	100.00	30000.00	M-179
			Add 10 per cent of the cost of reinforcing elements (synthetic geogrids) for accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the facia pannels, overlaps and other protective elements for synthetic geogrids.				3000.00	
			c) Overhead charges @ 0.055 on (a+b)				1988.79	
			d) Contractor's profit @ 0.1 on (a+b+c)				3814.86	
			Cost of 300 sqm of Synthetic geogrids = a+b+c+d				41963.50	
			Rate per sqm = (a+b+c+d)/ 300				139.88	
						say	140.00	
7.5	3104	(ii)	Facing elements of RCC					
			Unit = sqm					
			Taking output = 75 sqm					
			a) Labour					
			Mate	day	0.180	314.67	56.64	L-12
			Mazdoor	day	3.000	300.36	901.08	L-13
			Mazdoor skilled	day	1.500	414.80	622.20	L-15
			b) Machinery					
			Light crane with lifting capacity upto 3 tonne	hour	6.000	540.10	3240.60	P&M-41
			c) Material					
			Pre-cast RCC M-35 facing elements of size as per design and 18 cm thick for 75 sqm. (Refer Item 12.8 (H))	cu.m	13.500	3916.00	52866.00	Item 12.8 (H) Case I
			HYSD steel @ 5 kg / sqm (Refer Item 12.6)	tonnes	0.380	71410.00	27135.80	Item 13.6
			Add 2 per cent of cost of facia pannels, for all necessary temporary form work, scaffolding and provision of loops/lugs for lifting of pannels and joining the reinforcing elements.				1600.04	
			d) Overhead charges @ 0.055 on (a+b)				265.13	
			e) Contractor's profit @ 0.1 on (a+b+d)				508.56	
			Cost for 75 sqm = a+b+c+d+e				87196.05	
			Rate per sqm = (a+b+c+d+e)/ 75				1162.61	
						say	1163.00	
		Note	1.The specification and construction details to be adopted shall be as per section 3100 of MoRTH Specification.					
			2.Drainage arrangement shall be made as per approved design and drawings.					
			3.The quantity of filler media shall be calculated as per approved design and specifications and shall be priced separately.The rate for same to be adopted from chapter 15.					
			4.Excavation for foundation including foundation concrete and groove in the foundation for seating of bottom most facia panel and capping beam to be calculated as per design and priced separately. The rates for excavation and foundation concrete shall be taken from the chapter 12 & 13 in bridge section.					
			5.The earth fill to be retained is not included in this analysis. The same is to be worked out and provided separately complete as per clause 305.					
			6.For compaction of Earthwork, attention is invited to clause 3105.5 of MoRTH Specification.					
			7.Length of reinforcing strips will vary with the height of wall and will be as per approved design and drawings.					
			8.The type of reinforcing elements to be adopted shall be as per approved design and specifications.					
			9.The market rate for supply of reinforcing elements and their accessories are to be ascertained from reputed firms in the field of earth reinforcement.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		10.The earth fill material shall be clean, free draining, granular with high friction and low cohesion, non-corrosive, coarse grained with not 10 per cent of particles passing 75 micron sieve, free of any deleterious matter, chlorides, salts, acids, alkalies, mineral oil, fungus and microbes and shall be of specified PH value.					
		11.Capping beam is to be priced separately as per approved design. The rate for cement concrete shall be taken from the chapter of sub-structure in bridge section.					
		12.The cost of reinforced earth retaining wall shall include following:					
		(I) Excavation for foundation including backfilling.					
		(ii) Foundation concrete as per approved design.					
		(iii) Cost of facial pannels and their erection .					
		(iv) Cost of reinforcing elements including their fixing and joining with the facial pannels.					
		(v) Drainage arrangement including filter media as per approved design and drawings.					
		13. The compacted earth filling to be retained shall form part of embankment.					

CHAPTER-8
TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.1	408	Cast in Situ Cement Concrete M20 Kerb					
		Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408					
		Unit = Running metre					
		Taking output = 360 metre					
		A. Using Concrete Mixer					
		Cement Concrete					
		Cement concrete of grade M20 = 12.60 cum					
		Cement concrete of grade M10 for base= 11.61 cum					
		Total Concrete = 24.21 cu.m					
		a) Labour					
		Mate	day	0.720	314.67	226.56	L-12
		Mason	day	2.000	479.16	958.32	L-11
		Mazdoor	day	16.000	300.36	4805.76	L-13
		b) Machinery					
		Kerb casting machine @ 60 metres/hour	hour	6.000	279.72	1678.32	P&M-51
		Concrete mixer 0.48/0.28 cum capacity	hour	12.000	412.64	4951.68	P&M-003
		Water tanker 6 KL capacity	hour	5.000	111.24	556.20	P&M-17
		c) Material					
		Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	1110.00	24186.90	M-041
		Coarse sand 30 per cent	cum	10.900	252.20	2748.98	M-001
		Cement 11 per cent	tonne	5.700	5000.00	28500.00	M-015
		Cost of water	KL	30.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				3773.70	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				7238.64	
		Cost for 360 meter = a+b+c+d+e				79625.06	
		Rate per metre = (a+b+c+d+e)/360				221.18	
					say	221.00	
		B Using Concrete Batching and Mixing Plant					
		Cement Concrete					
		Cement concrete of grade M20 = 12.60 cum					
		Cement concrete of grade M10 for base = 11.61 cum					
		Total Concrete = 24.21 cu.m					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Mason	day	1.000	479.16	479.16	L-11
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Kerb casting machine @ 60 metres/hour	hour	6.000	279.72	1678.32	P&M-51
		Concrete batching and mixing plant @ 15 cum/hr.	hour	1.600	1704.24	2726.78	P&M-034
		Water tanker 6 KL capacity	hour	5.000	111.24	556.20	P&M-17
		Tipper 5.5 cum capacity	hour	6.000	1010.00	6060.00	P&M-13
		c) Material					
		Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	1110.00	24186.90	M-041
		Coarse sand 30 per cent	cum	10.900	252.20	2748.98	M-001
		Cement 11 per cent	tonne	5.700	5000.00	28500.00	M-015
		Cost of water	KL	30.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				3716.62	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				7129.14	
		Cost for 360 meter = a+b+c+d+e				78420.58	
		Rate per metre = (a+b+c+d+e)/360				217.83	
					say	218.00	
8.2	408	Cast in Situ Cement Concrete M 20 Kerb with Channel					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCCM20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408					
		A	Using Concrete Mixer					
			Unit = Running metre					
			Taking output = 300 metre length					
			Cement Concrete					
			Cement concrete of grade M20= 17.48 cum					
			Cement concrete of grade M10 for base = 23.18 cum					
			Total Concrete = 40.66 cum					
			a) Labour					
			Mate	day	0.720	314.67	226.56	L-12
			Mason	day	2.000	479.16	958.32	L-11
			Mazdoor	day	16.000	300.36	4805.76	L-13
			b) Machinery					
			Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	279.72	1678.32	P&M-51
			Concrete mixer 0.48/0.28	hour	16.000	412.64	6602.24	P&M-003
			Water tanker 6 KL capacity	hour	6.000	111.24	667.44	P&M-17
			c) Material					
			Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	1110.00	40614.90	M-041
			Coarse sand 30 per cent	cum	18.300	252.20	4615.26	M-001
			Cement 10 per cent	tonne	9.010	5000.00	45050.00	M-015
			Cost of water	KL	36.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				5787.03	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11100.58	
			Cost for 300 metre = a+b+c+d+e				122106.42	
			Rate per metre = (a+b+c+d+e)/300				407.02	
						say	407.00	
8.2		B	Using Concrete Batching and Mixing Plant					
			Unit = Running metre					
			Taking output = 300 metre length					
			Cement Concrete					
			Cement concrete of grade M20= 17.48 cum					
			Cement concrete of grade M10 for base = 23.18 cum					
			Total Concrete = 40.66 cum					
			a) Labour					
			Mate	day	0.120	314.67	37.76	L-12
			Mason	day	1.000	479.16	479.16	L-11
			Mazdoor	day	2.000	300.36	600.72	L-13
			b) Machinery					
			Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	279.72	1678.32	P&M-51
			Concrete batching and mixing plant @ 15 cum/hr.	hour	2.700	1704.24	4601.45	P&M-034
			Water tanker 6 KL capacity	hour	6.000	111.24	667.44	P&M-17
			Tipper of 5.5 cum capacity	hour	6.000	1010.00	6060.00	P&M-13
			c) Material					
			Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	1110.00	40614.90	M-041
			Coarse sand 30 per cent	cum	18.300	252.20	4615.26	M-001
			Cement 10 per cent	tonne	9.010	5000.00	45050.00	M-015
			Cost of water	KL	36.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				5742.28	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11014.73	
			Cost for 300 meter = a+b+c+d+e				121162.01	
			Rate per metre = (a+b+c+d+e)/300				403.87	
						say	404.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.3	801		Printing New Letter and Figures of any Shade					
			Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade					
		(i)	Hindi (Matras commas and the like not to be measured and paid for Half letter shall be counted as half)					
			Details for 100 letters of 16 cm height i.e. 1600 cm					
			Unit = per cm height per letter					
			a) Labour					
			Mate	day	0.120	314.67	37.76	L-12
			Painter	day	2.000	479.16	958.32	L-18
			Mazdoor	day	1.000	300.36	300.36	L-13
			b) Material					
			Paint	Litre	0.700	140.00	98.00	M-064
			c) Overhead charges @ 0.055 on (a+b)				76.69	
			d) Contractor's profit @ 0.1 on (a+b+c)				147.11	
			Cost for 1600 cm = a+b+c+d				1618.25	
			Rate per cm height per letter = (a+b+c+ d)/1600				1.01	
						say	<u>1.00</u>	
8.3		(ii)	English and Roman					
			Hyphens and the like not to be measured and paid for					
			Detail for 100 letters of 16 cm height. i.e.1600 cm					
			Unit = per cm height per letter					
			a) Labour					
			Mate	day	0.070	314.67	22.03	L-12
			Painter Ist class	day	1.250	479.16	598.95	L-18
			Mazdoor	day	0.500	300.36	150.18	L-13
			b) Material					
			Paint	Litre	0.500	140.00	70.00	M-064
			c) Overhead charges @ 0.055 on (a+b)				46.26	
			d) Contractor's profit @ 0.1 on (a+b+c)				88.74	
			Cost for 1600 cm = a+b+c+d				976.16	
			Rate per cm height per letter = (a+b+c +d)/1600				0.61	
						say	<u>0.60</u>	
8.4	801		Retro-Reflectorised Traffic Signs					
			Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
			Unit = Each					
			Taking output = one traffic sign					
			i) Excavation for foundation	cum	0.216	291.00	62.86	item 3.13 (1) A
			ii) Cement concrete M15 grade	cum	0.120	3846.00	461.52	Item 12.8 (A)
			iii) Painting angle iron post two coats	sqm	0.430	55.00	23.65	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	314.67	3.15	L-12
			Mazdoor	day	0.250	300.36	75.09	L-13
			b) Material					
			Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	55.000	1045.000	M-178 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable					
			Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				20.90	
		(i)	90 cm equilateral triangle	sqm	0.350	7738.53	2708.49	M-045
			or					
		(ii)	60 cm equilateral triangle	sqm	0.156	7738.53	1207.21	M-045

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		or					
	(iii)	60 cm circular	sqm	0.283	7738.53	2190.00	M-045
		or					
	(iv)	80 mm x 60 mm rectangular	sqm	0.480	7738.53	3714.49	M-045
		or					
	(v)	60 cm x 45 cm rectangular	sqm	0.270	7738.53	2089.40	M-045
		or					
	(vi)	60 cm x 60 cm square	sqm	0.360	7738.53	2785.87	M-045
		or					
	(vii)	90 cm high octagon	sqm	0.672	7738.53	5200.29	M-045
		c) Machinery					
		Tractor-trolley	hour	0.010	168.75	1.69	P&M-72
	(i)	90 cm equilateral triangle					
		d) Overhead charges @ 0.055 on (a+b+c)				211.99	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				406.63	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				5020.95	
					say	5021.00	
	(ii)	60 cm equilateral triangle					
		d) Overhead charges @ 0.055 on (a+b+c)				129.42	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				248.25	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				3278.72	
					say	3279.00	
	(iii)	60 cm circular					
		d) Overhead charges @ 0.055 on (a+b+c)				183.47	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				351.93	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				4419.25	
					say	4419.00	
	(iv)	80 mm x 60 mm rectangular					
		d) Overhead charges @ 0.055 on (a+b+c)				267.32	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				512.76	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				6188.43	
					say	6188.00	
	(v)	60 cm x 45 cm rectangular					
		d) Overhead charges @ 0.055 on (a+b+c)				177.94	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				341.32	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				4302.51	
					say	4303.00	
	(vi)	60 cm x 60 cm square					
		d) Overhead charges @ 0.055 on (a+b+c)				216.24	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				414.79	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				5110.76	
					say	5111.00	
	(vii)	90 cm high octagon					
		d) Overhead charges @ 0.055 on (a+b+c)				349.04	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				669.52	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				7912.69	
					say	7913.00	
	Note	1.Any one area of aluminium sheeting given at (i) to (vii) may be adopted as per site requirement and in accordance with IRC : 67					
		2.Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
		3. The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.					
8.5	801	Direction and Place Identification Signs upto 0.9 sqm Size Board.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Providing and erecting direction and place identification retro reflectorised sign as per IRC:67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing					
		Unit = sqm					
		Taking output = 0.9 sqm					
		i) Excavation for foundation	cum	0.216	291.00	62.86	Item No. 3.13
		ii) Cement concrete M15 grade	cum	0.120	3846.00	461.52	Item 12.8 (A)
		iii) Painting angle iron post two coats	sqm	0.430	55.00	23.65	Item 8.9
		a) Labour (For fixing at site)					
		Mate	day	0.010	314.67	3.15	L-12
		Mazdoor	day	0.200	300.36	60.07	L-13
		b) Material					
		Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 metres long	kg	19.000	55.000	1045.00	M-178 /1000
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size 0.9 sqm	sqm	0.900	7738.53	6964.68	M-045
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.				160.19	
		c) Machinery					
		Tractor-trolley	hour	0.020	168.75	3.38	P&M-72
		d) Overhead charges @ 0.055 on (a+b+c)				453.01	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				868.95	
		Cost for 0.9 sqm = i+ii+iii+ a+b+c+d+e				10106.44	
		Rate per sqm (for sign having area upto 0.9 sqm) = (i+ii+iii+a+b+c+d+e)/0.90				11229.38	
					say	<u>11229.00</u>	
		Note					
		i) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately					
		ii) Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
8.6	801	Direction and Place Identification Signs with size more than 0.9 sqm size Board.					
		Providing and erecting direction and place identification retro reflectorised sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
		Unit = sqm					
		Taking output = 1.50 sqm					
		i) Excavation for foundation	cum	0.430	291.00	125.13	Item No. 3.13
		ii) Cement concrete M15 grade	cum	0.240	3846.00	923.04	Item 12.8 (A)
		iii) Painting angle iron post 2 coats	sqm	0.860	55.00	47.30	Item 8.9
		a) Labour (For fixing at site)					
		Mate	day	0.010	314.67	3.15	L-12
		Mazdoor	day	0.300	300.36	90.11	L-13
		b) Material					
		Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 metres long, 2 nos	kg	38.000	55.000	2090.00	M-178 /1000
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting	sqm	1.500	7738.53	11607.80	M-045
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.				273.96	
		c) Machinery					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Tractor-trolley	hour	0.020	168.75	3.38	P&M-72
		d) Overhead charges @ 0.055 on (a+b+c)				773.76	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				1484.21	
		Cost for 1.5 sqm = I+ii+iii+ a+b+c+d+e				17421.83	
		Rate per sqm (for sign having area more than 0.9 sqm) = (i+ii+iii+a+b+c+d+e)/1.50				11614.55	
					say	11615.00	
		Note i) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately					
		ii) Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
8.7	802	Overhead Signs					
		Providing and erecting overhead signs with a corrosion resistant 2mm thick aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans					
		A Truss and Vertical Support					
		Unit = tonne					
		Taking output = 1 tonne					
		a) Labour					
		Mate	day	0.240	314.67	75.52	L-12
		Blacksmith	day	2.000	479.16	958.32	L-02
		Mazdoor including for handling & fixing at site.	day	4.000	300.36	1201.44	L-13
		b) Material					
		Aluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	49498.90	51973.85	M-044
		Add 1 per cent on cost of material for nuts, bolts and drilling and welding consumables				519.74	
		Add 15 per cent on cost of material for fabrication of trusses as per approved design				7874.04	
		c) Machinery					
		Crane 3 tonne capacity	hour	3.000	540.10	1620.30	P&M-41
		Truck	hour	0.500	889.00	444.50	P&M-74
		d) Overhead charges @ 0.055 on (a+b+c)				3556.72	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				6822.44	
		Rate per tonne = (a+b+c+d+e)				75046.87	
					say	75047.00	
8.7		B Aluminium Alloy Plate for Over Head Sign					
		Unit = sqm					
		Taking output = 1 sqm					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Blacksmith	day	0.100	479.16	47.92	L-02
		Mazdoor	day	0.150	300.36	45.05	L-13
		b) Material					
		Aluminium alloy plate, 2 mm thick, fixed with high intensity grade sheeting vide clause 801.3	sqm	1.000	1900.00	1900.00	M-096
		Miscellaneous					
		Add 1 per cent of cost of labour for lifting arrangement, like ladders, pulleys, ropes etc				0.99	
		c) Overhead charges @ 0.055 on (a+b)				110.01	
		d) Contractor's profit @ 0.1 on (a+b+c)				211.03	
		Rate per sqm = (a+b+c+d)				2321.30	
					say	2321.00	
		Note 1. The cost of excavation and foundation concrete for fixing of vertical support system to be worked out separately as per the approved drawing/design and to be included in the estimate.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		2. Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been included separately in this chapter.					
8.8	803	Painting Two Coats on New Concrete Surfaces					
		Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces					
		Unit = sqm					
		Taking output = 40 sqm					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Painter	day	2.000	479.16	958.32	L-18
		Mazdoor	day	1.000	300.36	300.36	L-13
		b) Material					
		Paint conforming to requirement of clause 803.3.	Litre	6.000	148.11	888.66	M-065
		Add for scaffolding @ 1 per cent of labour cost where required				12.96	
		c) Overhead charges @ 0.055 on (a+b)				120.89	
		d) Contractor's profit @ 0.1 on (a+b+c)				231.90	
		Cost for 40 sqm = a+b+c+d				2550.85	
		Rate per sqm = (a+b+c+d)/40				63.77	
					say	64.00	
8.9	803	Painting on Steel Surfaces					
		Providing and applying two coats of ready mix paint of approved brand on steel surface after through cleaning of surface to give an even shade					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.030	314.67	9.44	L-12
		Painter	day	0.450	479.16	215.62	L-18
		Mazdoor	day	0.250	300.36	75.09	L-13
		b) Material					
		Paint ready mixed approved brand.	Litre	1.250	140.00	175.00	M-064
		Add @ 1 per cent on cost of material for scaffolding				1.75	
		c) Overhead charges @ 0.055 on (a+b)				26.23	
		d) Contractor's profit @ 0.1 on (a+b+c)				50.31	
		Cost for 10 sqm = a+b+c+d				553.44	
		Rate per sqm = (a+b+c+d)/10				55.34	
					say	55.00	
8.10	803	Painting on Wood Surfaces					
		Providing and applying two coats of ready mix paint of approved brand on wood surface after thorough cleaning of surface to give an even shade					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.030	314.67	9.44	L-12
		Painter	day	0.500	479.16	239.58	L-18
		Mazdoor	day	0.200	300.36	60.07	L-13
		b) Material					
		Paint ready mixed of approved brand.	Litre	1.500	140.00	210.00	M-064
		Add @ 1 per cent on cost of material for scaffolding				2.10	
		c) Overhead charges @ 0.055 on (a+b)				28.67	
		d) Contractor's profit @ 0.1 on (a+b+c)				54.99	
		Cost for 10 sqm = a+b+c+d				604.84	
		Rate per sqm = (a+b+c+d)/10				60.48	
					say	60.00	
8.11	803	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control					
	(i)	Over 10 cm in width					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.090	314.67	28.32	L-12
		Painter	day	0.550	479.16	263.54	L-18
		Mazdoor	day	1.550	300.36	465.56	L-13
		b) Material					
		Road marking Paint as per IS :164	Litre	1.480	148.11	219.20	M-065
		c) Overhead charges @ 0.055 on (a+b)				53.71	
		d) Contractor's profit @ 0.1 on (a+b+c)				103.03	
		Cost for 10 sqm = a+b+c+d				1133.37	
		Rate per sqm= (a+b+c+d)/10				113.34	
					say	113.00	
8.11	(ii)	Up to 10 cm in width					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.070	314.67	22.03	L-12
		Painter	day	0.350	479.16	167.71	L-18
		Mazdoor	day	1.350	300.36	405.49	L-13
		b) Material					
		Road marking paint	Litre	1.480	148.11	219.20	M-065
		c) Overhead charges @ 0.055 on (a+b)				44.79	
		d) Contractor's profit @ 0.1 on (a+b+c)				85.92	
		Cost for 10 sqm = a+b+c+d				945.14	
		Rate per sqm = (a+b+c+d)/10				94.51	
					say	95.00	
8.12	803	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work					
		Painting lines, dashes, arrows etc on roads in two coats on old work with ready mixed road marking paint conforming to IS: 164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control					
	(i)	Over 10 cm in width					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.060	314.67	18.88	L-12
		Painter 1st class	day	0.300	479.16	143.75	L-18
		Mazdoor	day	1.250	300.36	375.45	L-13
		b) Material					
		Road marking paint	Litre	0.900	148.11	133.30	M-065
		c) Overhead charges @ 0.055 on (a+b)				36.93	
		d) Contractor's profit @ 0.1 on (a+b+c)				70.83	
		Cost for 10 sqm = a+b+c+d				779.13	
		Rate per sqm = (a+b+c+d)/10				77.91	
					say	78.00	
8.12	(ii)	Up to 10 cm in width					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.070	314.67	22.03	L-12
		Painter 1st class	day	0.350	479.16	167.71	L-18
		Mazdoor	day	1.350	300.36	405.49	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Material					
		Road marking Paint	Litre	0.900	148.11	133.30	M-065
		c) Overhead charges @ 0.055 on (a+b)				40.07	
		d) Contractor's profit @ 0.1 on (a+b+c)				76.86	
		Cost for 10 sqm= a+b+c+d				845.45	
		Rate per sqm = (a+b+c+d)/10				84.54	
					say	85.00	
8.13	803	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface					
		Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.					
		Unit = sqm					
		Taking output = 640 sqm					
		a) Labour					
		Mate	day	0.500	314.67	157.34	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Road marking machine @ 80 sqm per hour	hour	8.000	85.86	686.88	P&M-65
		Tractor-trolley	hour	8.000	168.75	1350.00	P&M-72
		c) Material					
		Hot applied thermoplastic compound	Litre	2000.000	168.88	337760.00	M-133
		Reflectorising glass beads	kg	200.000	64.78	12956.00	M-157
		d) Overhead charges @ 0.055 on (a+b+c)				19443.10	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				37295.40	
		Cost for 640 sqm = a+b+c+d+e				410249.44	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate per sqm = a+b+c+d+e)/640				641.01	
						say	<u>641.00</u>	
		Note	1. A sealing primer may be applied in advance on cement concrete pavement to ensure proper bonding. Any laitance and/or curing compound to be removed where paint is required to be applied on concrete surface.					
			2. Cost of painter is already included in hire charges of road marking machine.					
8.14	804		Kilometre Stone					
			Reinforced cement concrete M15 grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc					
		(i)	5th kilometre stone (precast)					
			Unit = Nos.					
			Taking output = 6 Nos.					
			a) M-15 grade of concrete	cum	2.350	3846.00	9038.10	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	22.080	71.410	1576.73	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	1.680	291.00	488.88	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	9.850	64.00	630.40	Item 8.8
			e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	0.60	1080.00	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.260	314.67	81.81	L-12
			Mason	day	0.600	479.16	287.50	L-11
			Mazdoor including loading/unloading	day	6.000	300.36	1802.16	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	168.75	1012.50	P&M-72
			h) Overhead charges @ 0.055 on (f+g)				175.12	
			i) Contractor's profit @ 0.1 on (f+g+h)				335.91	
			Cost for 6 Nos. 5th km stone = a+b+c+ d+e +f+g+h +i				16509.11	
			Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i)/ 6				2751.52	
						say	<u>2752.00</u>	
8.14		(ii)	Ordinary kilometer stone (precast)					
			Unit = Nos.					
			Taking output = 14 Nos.					
			a) M-15 grade of concrete	cum	3.770	3846.00	14499.42	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	26.320	71.410	1879.51	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	2.770	291.00	806.07	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	11.410	64.00	730.24	Item 8.8
			e) Lettering on km post (average 12 letters of 10 cm height each)	per cm per letter	1680.000	0.60	1008.00	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.320	314.67	100.69	L-12
			Mason	day	1.000	479.16	479.16	L-11
			Mazdoor	day	7.000	300.36	2102.52	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	168.75	1012.50	P&M-72
			h) Overhead charges @ 0.055 on (f+g)				203.22	
			i) Contractor's profit @ 0.1 on (f+g+h)				389.81	
			Cost for 14 Nos. ordinary km stone = (a+b+ c+d+e+f+g+h+i)				23211.14	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate for each ordinary km stone = (a+b+ c+d+e+f+g+h+j) /14				1657.94	
						say	1658.00	
8.14		(iii)	Hectometer stone (precast)					
			Unit = Nos.					
			Taking output = 33 Nos.					
			a) M-15 grade of concrete	cum	1.580	3846.00	6076.68	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	66.000	71.410	4713.06	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	1.390	291.00	404.49	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	6.270	64.00	401.28	Item 8.8
			e) Lettering on km post (average 1 letter of 10 cm height each)	per cm per letter	330.000	0.60	198.00	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.340	314.67	106.99	L-12
			Mason	day	1.500	479.16	718.74	L-11
			Mazdoor	day	7.000	300.36	2102.52	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	168.75	1012.50	P&M-72
			h) Overhead charges @ 0.055 on (f+g)				216.74	
			i) Contractor's profit @ 0.1 on (f+g+h)				415.75	
			Cost for 33 Nos. Hectometer stone = (a+b+c+d+e+f+ g+h+i)				16366.75	
			Rate for each Hectometer stone = (a+b +c +d+e+f+ g+h+i) / 33				495.96	
						say	496.00	
		Note	The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective chapters.					
8.15	805		Road Delineators					
			Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79 and the drawings.					
			Unit = Each					
			Taking output= 30 Nos.					
			a) Labour					
			Mate	day	0.040	314.67	12.59	L-12
			Mazdoor for fixing	day	1.000	300.36	300.36	L-13
			b) Material					
			Cost of approved type of delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	30.000	535.00	16050.00	M-110
			Add 10 per cent cost of material for installation				1605.00	
			c) Overhead charges @ 0.055 on (a+b)				988.24	
			d) Contractor's profit @ 0.1 on (a+b+c)				1895.62	
			Cost for 30 Nos. delineators = (a+b+ c+d)				20851.80	
			Rate per delineators = (a+b+c+d) /30				695.06	
						say	695.00	
		Note	In case of soft ground, a proper foundation may be provided as per approved design. In case foundation is required to be provided, the items of excavation and foundation concrete are required to be measured and paid separately.					
8.16	806		Boundary pillar					
			Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Unit = Each					
		Taking output = 57 Nos.					
		a) M-15 grade of the boundary stone	cum	1.250	3846.00	4807.50	Item 12.8 (A)
		b) Steel reinforcement	kg	79.800	71.410	5698.52	Item 13.6 /1000
		c) Excavation in soil	cum	10.720	291.00	3119.52	Item No. 3.13
		d) Lettering, each 10 cm high	per letter per cm high	2280.000	0.60	1368.00	Item 8.3
		Transportation and fixing					
		e) Labour					
		Mate	day	0.570	314.67	179.36	L-12
		Mazdoor	day	14.250	300.36	4280.13	L-13
		f) Machinery					
		Tractor-trolley	hour	6.000	168.75	1012.50	P&M-72
		g) Material					
		Stone spall	cum	11.970	574.90	6881.55	M-019
		h) Overhead charges @ 0.055 on (e+f+g)				679.44	
		i) Contractor's profit @ 0.1 on (e+f+g+h)				1303.30	
		Cost for 57 Nos. boundary pillar = (a+b +c+d +e+ f+g+h+i)				29329.83	
		Rate for each boundary pillar = (a+b+c+d+e+ f+g+h+i)/57				514.56	
					say	<u>515.00</u>	
		Note	In case of soft ground, a proper foundation may be provided as per approved design. In case foundation is required to be provided, the items of excavation and foundation concrete are required to be measured and paid separately.				
8.17	807	G.I Barbed Wire Fencing 1.2 Metre High					
		Providing and fixing 1.2 metres high GI barbed wire fencing with 1.8 m angle iron posts 40 mm x 40 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 9 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807					
		Unit = per running metre					
		Taking output = 30 metres					
		a) Labour					
		Mate	day	0.090	314.67	28.32	L-12
		Blacksmith	day	0.250	479.16	119.79	L-02
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Material					
		Barbed wire 335 metres length @ 9.38 kg per 100 metres	kg	31.420	55.00	1728.10	M-215
		MS angle iron 40 mm x 40mm x 6 mm, 23 metres in length @ 3.5 kg per metre	kg	80.500	55.000	4427.50	M-178 /1000
		Add for GI staple binding wire, drilling holes etc. @ 2 per cent of the cost of material				123.11	
		c) Painting					
		Applying two coats of painting on exposed surface of angle iron posts (Rate as per item no. 8.9)	sqm	2.110	55.00	116.05	Item 8.9
		d) Overhead charges @ 0.055 on (a+b)				386.51	
		e) Contractor's profit @ 0.1 on (a+b+d)				741.41	
		Cost for 30 metres fencing = a+b+c+d+e				8271.51	
		Rate per metre = (a+b+c+d+e)/30				275.72	
					say	<u>276.00</u>	
		Note	Cost of excavation for foundation and foundation concrete to be added separately in the cost estimate as per approved design. The rate for these items may be taken from respective chapters.				
8.18	807	G.I Barbed Wire Fencing 1.8 Metre High					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807					
		Unit = per running metre					
		Taking output = 30 metres					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Blacksmith	day	0.400	479.16	191.66	L-02
		Mazdoor	day	2.500	300.36	750.90	L-13
		b) Material					
		Barbed wire 428 metres length @ 9.38 kg per 100 metres	kg	40.150	55.00	2208.25	M-215
		MS angle iron 50 mm x 50 mm x 6 mm, 33.8 metres in length @ 4.5 kg per metre	kg	152.000	55.000	8360.00	M-178 /1000
		Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material				211.37	
		c) Painting					
		Applying two coats of painting on exposed surface of angle iron posts	sqm	3.960	55.00	217.80	Item 8.9
		d) Overhead charges @ 0.055 on (a+b)				646.80	
		e) Contractor's profit @ 0.1 on (a+b+d)				1240.67	
		Cost for 30 metres fencing = a+b+c+d+e				13865.21	
		Rate per metre fencing = (a+b+c +d+e)/30				462.17	
					say	<u>462.00</u>	
		Note Cost of excavation for foundation and foundation concrete to be added separately in the cost estimate as per approved design. The rate for these items may be taken from respective chapters.					
8.19	Suggestive	Fencing With Welded Steel Wire Fabric 75 mm x 50 mm					
		Providing 1.20 metre high fencing with angle iron posts 50 mm x 50 mm x 6 mm at 3 metre center to center with 0.40 metre embedded in M15 grade cement concrete, corner, end and every 10th post to be strutted, provided with welded steel wire fabric of 75 mm x 50 mm mesh or 75 mm x 25 mm mesh and fixed to iron posts by flat iron 50 x 5 mm and bolts etc. complete in all respects.					
		Unit = Running metre					
		Taking output = 30 m					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Welder	day	1.000	479.16	479.16	L-02
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Material					
		i) Angle iron for posts 50 x 50 x 6 mm	kg	106.000	55.000	5830.00	M-178 /1000
		ii) Runner flat 50 x 5 mm	kg	26.000	55.000	1430.00	M-178 /1000
		iii) Welded steel wire fabric 75x50 mm mesh @ 4 kg/sqm, 4 x 30 x 1.2 + 5 per cent wastage	kg	151.000	input	#VALUE!	M-186
		OR					
		Welded steel wire fabric 75 x 25 mm mesh @ 7.75 kg/sqm, 7.75 x 30 x 1.2 + 5 per cent wastage	kg	293.000			
		Add 2.5 per cent of cost of material for drilling holes in angles, flats, splitting angle at bottom, nuts and bolts and welded consumables				#VALUE!	
		c) Machinery					
		Tractor-trolley	hour	0.100	168.75	16.88	P&M-72
		d) Painting					
		Painting two coats including priming	sqm	8.000	55.00	440.00	Item 8.9

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) Overhead charges @ 0.055 on (a+b+c)				#VALUE!	
		f) Contractor's profit @ 0.1 on (a+b+c+e)				#VALUE!	
		Cost for 30 metre = a+b+c+d+e+f				#VALUE!	
		Rate per metre = (a+b+c+d+e+f)/30				#VALUE!	
					say	#VALUE!	
		Note i) Adopt any one type of welded steel wire fabric 75 x 50 mm or 75 x 25 mm as per approved design.					
		ii) The item of excavation and cement concrete in foundation shall be measured and paid separately					
8.20	808	Tubular Steel Railing on Medium Weight Steel Channel (ISMC series) 100 mm x 50 mm					
		Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 metres high above ground, 2 m centre to centre, complete as per approved drawings					
		Unit = Running metre					
		Taking output = 10metres					
		i) Excavation for foundation (6 Nos)6 x 0.6 x 0.6 x 0.6	cum	1.296	291.00	377.14	Item No. 3.13
		ii) Foundation concrete M-15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	3846.00	2492.21	Item 12.8 (A)
		iii) Painting of pipe	sqm	4.710	55.00	259.05	Item 8.9
		iv) Painting of channel section 6 nos,1.8 metres each 0.2 x 1.8 x 6 = 2.16	sqm	2.160	55.00	118.80	Item 8.9
		a) Labour (For fixing at site)					
		Mate	day	0.010	314.67	3.15	L-12
		Mazdoor	day	0.250	300.36	75.09	L-13
		Plumber	day	0.010	479.16	4.79	L-02
		b) Material					
		Steel pipe 50 mm external dia as per IS:1239	metre	30.000	184.43	5532.90	M-075
		Medium weight steel channel (ISMC series) 100 mm x 50 mm,10.8 metres length @ 9.2 kg per metre	kg	99.360	55.000	5464.80	M-178 /1000
		Add for drilling holes @ 2 per cent of cost of channels				109.30	
		c) Machinery					
		Tractor-trolley	hour	0.040	168.75	6.75	P&M-72
		d) Overhead charges @ 0.055 on (a+b+c)				794.42	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				1523.84	
		Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e				16762.23	
		Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10				1676.22	
					say	1676.00	
8.21	808	Tubular Steel Railing on Precast RCC Posts, 1.2 m High Above Ground Level					
		Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts1.8 metres high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing					
		Unit = Running metre					
		Taking output = 10metres					
		i) Excavation for foundation (6 Nos)6 x 0.6 x 0.6 x 0.6	cum	1.296	291.00	377.14	Item No. 3.13
		ii) Foundation concrete M - 15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	3846.00	2492.21	Item 12.8 (A)
		iii) RCC M - 20 for pre cast posts 6 nos of 1.8 metres each	cum	0.320	4891.00	1565.12	Item 14.1(A)
		iv) Painting of pipe	sqm	4.710	55.00	259.05	Item 8.9
		a) Labour					
		Mate	day	0.014	314.67	4.41	L-12
		Mazdoor	day	0.350	300.36	105.13	L-13
		Plumber	day	0.010	479.16	4.79	L-02
		b) Material					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Steel pipe 50 mm dia as per IS:1239	metre	30.000	184.43	5532.90	M-075
		c) Machinery					
		Tractor-trolley	hour	0.250	168.75	42.19	P&M-72
		d) Overhead charges @ 0.055 on (a+b+c)				312.92	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				600.23	
		Cost for 10 metre = i+ii+iii+iv+ a+b+c+d+e				11296.07	
		Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10				1129.61	
					say	1130.00	
8.22	809	Reinforced Cement Concrete Crash Barrier					
		Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified					
		Unit = Linear metre					
		Taking output = 10 m					
	(i)	a) M 20 grade concrete					
		M 20 grade concrete	cum	3.000	3846.00	11538.00	Item 14.1(A)
		b) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor	day	1.000	300.36	300.36	L-13
		c) Material					
		HYSD steel reinforcement including dowel bars	tonne	0.280	55375.00	15505.00	M-051
		Pre-moulded asphalt filler board	sqm	0.320	695.97	222.71	M-066
		d) Overhead charges @ 0.055 on (b+c)				882.24	
		e) Contractor's profit @ 0.1 on (b+c+d)				1692.29	
		Cost for 10 metre = a+b+c+d+e				30153.18	
		Rate per metre = (a+b+c+d+e)/10				3015.32	
					say	3015.00	
	Note	i) Excavation and backfilling are incidental to work and not to be measured separately.					
		ii) Rate for RCC M 20 may be taken from chapter on super structure.					
8.23	810	Metal Beam Crash Barrier					
	A	Type - A, "W" : Metal Beam Crash Barrier					
		Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 810					
		Unit = Running metre					
		Taking output = 4.5 metre length					
		a) Labour					
		Mate	day	0.060	314.67	18.88	L-12
		Blacksmith	day	0.500	479.16	239.58	L-02
		Mazdoor	day	1.000	300.36	300.36	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	168.75	16.88	P&M-72
		c) Material					
		Corrugated sheet, 3 mm thick, "W" beam section railing, 4.5 m in length	kg	41.210	55.000	2266.55	M-178 /1000

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Channel post 150 x 75 x 5 mm, 1.8 m long, 3 Nos @ 16.4 kg per metre	kg	88.560	55.000	4870.80	M-178 /1000
			Spacer 150 x 75 x 5 mm channel 0.33 m long, 3 Nos @ 16.4 kg per metre	kg	16.240	55.000	893.20	M-178 /1000
			Nuts and bolts	kg	20.000	48.00	960.00	M-063
			Add 25 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				2247.64	
			d) Overhead charges @ 0.055 on (a+b+c)				649.76	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1246.36	
			Cost for 4.5 metre = a+b+c+d+e				13710.01	
			Rate per metre = (a+b+c+d+e)/4.5				3046.67	
						say	3047.00	
8.23		B	Type - B, "THRIE" : Metal Beam Crash Barrier					
			Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 2 m high with 1.15 m below ground level, all steel parts and fittings to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a space of channel section 150 x 75 x 5 mm, 546 mm long complete as per clause 810					
			Unit = Running metre					
			Taking output = 4.5 metre length					
			a) Labour					
			Mate	day	0.060	314.67	18.88	L-12
			Blacksmith	day	0.500	479.16	239.58	L-02
			Mazdoor	day	1.000	300.36	300.36	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	168.75	16.88	P&M-72
			c) Material					
			Corrugated sheet, 3 mm thick, "Thrie" beam section railing, 4.5 m in length	kg	72.940	47.07	3433.29	M-109
			Channel post 150 x 75 x 5 mm, 2 m long, 3 Nos @ 16.4 kg per metre	kg	98.400	55.000	5412.00	M-178 /1000
			Spacer 150 x 75 x 5 mm channel 0.546 m long, 3 Nos	kg	26.860	55.000	1477.30	M-178 /1000
			Nuts and bolts	kg	30.000	48.00	1440.00	M-063
			Add 15 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				1764.39	
			d) Overhead charges @ 0.055 on (a+b+c)				775.65	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1487.83	
			Cost for 4.5 metre = a+b+c+d+e				16366.15	
			Rate per metre = (a+b+c+d+e)/4.5				3636.92	
						say	3637.00	
		Note	In the case of median crash barrier, "W" metal beam or thrie beam section should be provided on both sides of the vertical posts fixed in the median. Extra provision for metal beam railing and spacer is required to be made when fixed in the median depending on approved design.					
8.24	811		Road Traffic Signals electrically operated					
		Note	Since it is a ready made item commercially produced and erected by specialised firm in the electrical and electronic field, rate may be taken based on market enquiry from firms specialised in this field and ISI certified for the approved design and drawing.					
8.25	Suggestive		Flexible Crash Barrier, Wire Rope Safety Barrier					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (ISMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M 15 grade cement concrete 450 x 450 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M 15 grade cement concrete foundation 2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 45° C inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement concrete.					
		Unit = Running metre					
		Taking output = 15 metre					
		a) Labour					
		Mate	day	0.120	314.67	37.76	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		Blacksmith	day	1.000	479.16	479.16	L-02
		b) Material					
		i) RS Joist 100 x 75 mm - 16.5 m @ 11.5 kg per metre	kg	190.000	55.000	10450.00	M-178 /1000
		ii) Struts - 2 Nos. for terminal posts, 2 m long each 2 x 2 x 11.50	kg	46.000	55.000	2530.00	M-178 /1000
		iii) Tie 2 Nos. of 8 mm steel plate, 1.5 sqm each for terminal posts @ 62.80 kg/sqm (2 x 1.5)	kg	188.400	55.000	10362.00	M-178 /1000
		iv) Steel wire rope 40 mm, including 7.50 per cent extra for fixing at ends 15 x 4 x 1.075 @ 1 kg per m	kg	65.000	56.00	3640.00	M-176
		Add 5 per cent of cost of material for drilling, gripping, fixing, fabrication and welding consumables				1349.10	
		c) Painting					
		Applying 2 coats of painting on exposed surface	sqm	16.500	55.00	907.50	Item 8.9
		d) Machinery					
		Tractor-trolley	hour	0.250	168.75	42.19	P&M-72
		e) Overhead charges @ 0.055 on (a+b+d)				1622.00	
		f) Contractor's profit @ 0.1 on (a+b+d+e)				3111.29	
		Cost for 15 m = a+b+c+d+e+f				35131.72	
		Rate per m = (a+b+c+d+e+f)/15				2342.11	
					say	2342.00	
		Note					The items of excavations and cement concrete works will be measured and included separately as per the approved designs and drawings.
8.26	Suggestive	Anti-Glare Devices in Median					
	A	Plantation					
		Plantation of shrubs and plants of approved species in the median. apart from cutting off glare from vehicle coming from opposite direction, these plants provide a pleasant environment and are eco-friendly. The rate for this item is available in the chapter 11 on horticulture.					
	B	Anti-glare screen with 25 mm steel pipe framework fixed with circular and rectangular vanes					
		Providing and erecting an anti - glare screen with 25 mm dia vertical pipes fabricated and framed in the form of panels of one metre length and 1.75 metre height fixed with circular vane 250 mm dia at top and rectangular vane 600 x 300 mm at the middle, made out of steel sheet of 3 mm thickness, end vertical pipes of the panel made larger for embedding in foundation concrete, applying 2 coats of paint on all exposed surfaces, all as per approved design and drawings.					
		Unit = Running metre					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Taking output = one metre					
		a) Labour					
		Mate	day	0.004	314.67	1.26	L-12
		Mazdoor	day	0.100	300.36	30.04	L-13
		b) Material					
		i) 25 mm steel pipe	metre	16.000	103.95	1663.20	M-174
		ii) MS sheet for 600 x 300 x 3 mm rectangular vane, one number @ 24kg/sqm	kg	4.320	55.000	237.60	M-178 /1000
		iii) MS sheet for 250 mm dia circular vane 3 mm thick, 4 numbers @ 24 kg/sqm	kg	4.800	55.000	264.00	M-178 /1000
		Add 5 per cent cost of material for fabrication, welding, bending, nuts, bolts etc				108.24	
		c) Painting					
		Applying 2 coats of painting on exposed surface	sqm	1.830	55.00	100.65	Item 8.9
		d) Overhead charges @ 0.055 on (a+b)				126.74	
		e) Contractor's profit @ 0.1 on (a+b+d)				243.11	
		Rate per metre = a+b+c+d+e				2774.83	
					say	2775.00	
		Note					
		The items of excavation and cement concrete as per approved design to be measured and paid separately					
8.26		C Anti-glare screen with rectangular vane of MS sheet					
		Providing and erecting anti - glare screen with rectangular vanes of size 750 x 500 mm made from MS sheet, 3 mm thick and fixed on MS angle 50 x 50 x 6 mm at an angle of 45° C to the direction of flow of traffic, 1.5 m center to center, top edge of the screen 1.75 m above ground level, vertical post firmly embedded in M-15 cement concrete foundation 0.60 m below ground level, applying 2 coats of paint on exposed faces, all complete as per approved design and drawings					
		Unit = Running metre					
		Taking output = 1.50 metre					
		a) Labour					
		Mate	day	0.004	314.67	1.26	L-12
		Mazdoor	day	0.100	300.36	30.04	L-13
		b) Material					
		i) Angle iron post, 50 x 50 x 6 mm, length 2.35 m	kg	10.580	55.000	581.90	M-178 /1000
		ii) MS sheet 3 mm thick @ 24 kg/sqm	kg	9.000	55.000	495.00	M-178 /1000
		Add 5 percent of cost of material for fabrication, nuts, bolts etc				53.85	
		c) Machinery					
		Tractor-trolley	hour	0.100	168.75	16.88	P&M-72
		d) Painting					
		Applying 2 coats of painting	sqm	0.850	55.00	46.75	Item 8.9
		e) Overhead charges @ 0.055 on (a+b+c)				64.84	
		f) Contractor's profit @ 0.1 on (a+b+c+e)				124.38	
		Cost for 1.5 m = a+b+c+d+e+f				1414.88	
		Rate per metre = (a+b+c+d+e+f)/1.50				943.25	
					say	943.00	
		Note					
		The items of excavation and cement concrete as per approved design to be measured and paid separately. Rate of painting has been analysed separately in this chapter.					
8.27	Suggestive	Street Lighting					
		Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 9 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with sodium vapour lamp and fixed firmly in concrete foundation.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Unit = Each					
		Taking output = one light					
		a) Labour					
		Mate	day	0.030	314.67	9.44	L-12
		Mazdoor	day	0.500	300.36	150.18	L-13
		Electrician	day	0.250	479.16	119.79	L-02
		b) Material					
		i) Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	1.000	95.75	95.75	M-171
		ii) Sodium vapour lamp	each	1.000	260.00	260.00	M-169
		Add 5 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				17.79	
		c) Painting					
		For Fixing in Median					
		Providing two coats of alluminium paint over steel circular hollow pipe with overhang on both sides	sqm	5.750	55.00	316.25	Item 8.9
		For fixing in Footpath					
		Providing two coats of alluminium paint over steel circular hollow pipe with overhang on one side	sqm	4.630	55.00	254.65	Item 8.9
		(i) For Fixing in Median					
		d) Overhead charges @ 0.055 on (a+b)				35.91	
		e) Contractor's profit @ 0.1 on (a+b+d)				68.89	
		Rate per light for fixing in Median= a+b+c+d+e				1074.00	
					say	<u>1074.00</u>	
		(ii) For fixing in Footpath					
		Rate per light for Fixing in Footpath = a+b+c+d+e				1012.40	
					say	<u>1012.00</u>	
		Note					The items of excavation and cement concrete foundation will be measured and included separately in the estimate as per approved design and drawing. The rate for painting has been analysed in this chapter.
8.28	Suggestive	Lighting on Bridges					
		Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp					
		Unit = Each					
		Taking output = one light					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoor	day	0.400	300.36	120.14	L-13
		Electrician	day	0.200	479.16	95.83	L-02
		b) Material					
		i) Steel circular hollow pole of standard specification for street lighting to mount light at 5 m above deck level	each	1.000	72.75	72.75	M-170
		ii) Sodium vapour lamp 70 watt	each	1.000	260.00	260.00	M-169
		Add 1 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				3.33	
		c) Painting					
		Providing two coats of alluminium paint over steel circular hollow pipe	sqm	2.760	55.00	151.80	Item 8.9
		d) Overhead charges @ 0.055 on (a+b)				30.71	
		e) Contractor's profit @ 0.1 on (a+b+d)				58.91	
		Rate per light = a+b+c+d+e				799.76	
					say	<u>800.00</u>	
		Note					The items of cement concrete to be measured and paid separately as per approved design. The rate for painting has already been analysed in this chapter.
8.29	Suggestive	Cable Duct Across the Road					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Providing and laying of a reinforced cement concrete pipe duct, 300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills, constructing head walls at both ends, providing a minimum fill of granular material over top and sides of RCC pipe as per IRC:98-1997, bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 - 1997 and approved drawings.					
		Case(i) Single row for one utility service					
		Unit = Running metre					
		Taking output = 20metres					
		a) Random Rubble masonry/Brick masonry in cement mortar 1:6 for head wall both side	cum	2.360	2946.00	6952.56	Item 12.7 (B)
		b) Labour					
		Mate	day	0.050	314.67	15.73	L-12
		Mazdoor	day	1.000	300.36	300.36	L-13
		Mazdoor skilled	day	0.250	414.80	103.70	L-15
		c) Material					
		Reinforced Cement Concrete pipe 300 mm dia	metre	20.000	975.25	19505.00	M-156
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 20 m)	cum	7.200	190.00	1368.00	M-020
		Collar for joints 300 mm dia	each	9.000	input	#VALUE!	M-107
		Cement mortar 1:2 for joints	cum	0.020	3878.00	77.56	Item 12.6 (B)
		d) Machinery					
		Tractor-trolley	hour	0.500	168.75	84.38	P&M-72
		e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!	
		f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
		Cost for 20 metre = a+b+c+d+e+f				#VALUE!	
		Rate per metre = (a+b+c+d+e+f)/20				#VALUE!	
					say	#VALUE!	
8.29		Case(ii) Double row for two utility services					
		Unit = Running metre					
		Taking output = 20metres					
		a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides.	cum	3.370	2946.00	9928.02	Item 12.7 (B)
		b) Labour					
		Mate	day	0.050	314.67	15.73	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		Mazdoor skilled	day	0.250	414.80	103.70	L-15
		c) Material					
		Reinforced Cement Concrete pipe 300 mm dia	metre	40.000	975.25	39010.00	M-156
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 40 m)	cum	14.400	190.00	2736.00	M-020
		Collar for joints 300 mm dia	each	18.000	input	#VALUE!	M-107
		Cement mortar 1:2 for joints	cum	0.040	3878.00	155.12	Item 12.6 (B)
		d) Machinery					
		Tractor-trolley	hour	1.000	168.75	168.75	P&M-72
		e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!	
		f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
		Cost for 20 metre = a+b+c+d+e+f				#VALUE!	
		Rate per metre = (a+b+c+d+e+f)/20				#VALUE!	
					say	#VALUE!	
8.29		Case(iii) Triple rRow for three utility services					
		Unit = Running metre					
		Taking output = 20metres					
		a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides.	cum	4.380	2946.00	12903.48	Item 12.7 (B)

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Labour					
		Mate	day	0.160	314.67	50.35	L-12
		Mazdoor	day	3.000	300.36	901.08	L-13
		Mazdoor skilled	day	1.000	414.80	414.80	L-15
		c) Material					
		Reinforced Cement Concrete pipe 300 mm dia	metre	60.000	975.25	58515.00	M-156
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 60 m)	cum	21.600	190.00	4104.00	M-020
		Collar for joints 300 mm dia	each	27.000	input	#VALUE!	M-107
		Cement mortar 1:2 for joints	cum	0.060	3878.00	232.68	Item 12.6 (B)
		d) Machinery					
		Tractor-trolley	hour	1.500	168.75	253.13	P&M-72
		e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!	
		f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
		Cost for 20 metre = a+b+c+d+e+f				#VALUE!	
		Rate per metre = (a+b+c+d+e+f)/20				#VALUE!	
					say	#VALUE!	
		Note					
		1. Inspection chamber at both ends is the responsibility of the agency who is laying the duct. Hence not included.					
		2. The rates for stone masonry / brick masonry and cement mortar to be adopted from respective clauses.					
8.30	Suggestive	Highway Patrolling and Traffic Aid Post					
		It is proposed to locate one Traffic Aid Post every 50-60 km of the highway.					
		The organisation and financial aspect are required to be finalised in consultation with administrative and traffic authorities .					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.31	Suggestive		Items Related to Underpass/ Subway/ Overhead Bridge/ Overhead Foot Bridge					
			The items involved for underpass/ subway/ overhead bridge/ overhead foot bridge are earthwork, plain cement concrete, plastering, painting, information sign etc. The rates for these items are available in respective chapters which can be adopted for the quantities derived from the approved designs and drawings					
8.32	Suggestive		Traffic Control System and Communication System					
			Providing a traffic control centre and communication system including telecommunication facilities and related accessories, CCTV, radar, vehicle detection camera, central computer system					
			These are specialised item of telecommunication system and are the commercial products. The designer is required to contact the manufacturers to ascertain market prices. In case of civil works required to be executed for these installations, pricing may be done as per rates in relevant chapters for quantities derived as per approved design and drawing.					
			As regards the locations where such devices are required to be installed, the traffic control authority should be consulted to finalise the location					
8.33	Suggestive		Gantry Mounted Variable Message Sign Board					
			Providing and erecting gantry mounted variable message sign board electronically operated capable of flashing the desired message over a designed support system of aluminium alloy or galvanised steel, erected as per approved design and drawings and with lateral clearance as per clause 802.3					
		(i)	Gantry Support System					
			Unit = tonne					
			Taking output=1 tonne					
			a) Labour					
			Mate	day	0.120	314.67	37.76	L-12
			Mazdoor	day	2.000	300.36	600.72	L-13
			Blacksmith	day	1.000	479.16	479.16	L-02
			b) Material					
			Alluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	49498.90	51973.85	M-044
			Add 15 per cent of cost of material for fabrication and erection.				7796.08	
			Add 1 per cent of cost of material for nuts, bolts and welding				519.74	
			c) Machinery					
			Truck 10 tonne	hour	1.000	889.00	889.00	P&M-74
			d) Overhead charges @ 0.055 on (a+b+c)				3426.30	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6572.26	
			Rate per tonne = a+b+c+d+e				72294.86	
						say	72295.00	
8.33		(ii)	Message Display					
			Message display board 6 sqm electronically operated with complete electronic fitments for flashing the pre-determined messages.					
			This is a specialised commercial product and the lumpsum rate including erection at site is required to be as ascertained from the market and including in the rate analysis. The size of the board will vary depending upon specific location.					
			The rate for the gantry mounted variable sign would be the addition of cost of gantry support system as per approved design determined at (i) above and the cost of message display board as ascertained from the market at (ii) above					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.34	Suggestive		Traffic Impact Attenuators at Abutments and Piers					
		A	With Scrap Tyres					
			Provision and installation of traffic attenuators at abutment/pier of flyovers bridges using scrap tyres of size 100 x 20 retrieved from trucks laid in 2 rows and 4 tiers, one above the other and tied with 20 mm wire rope as per approved design and drawings.					
			Unit = sqm					
			Taking output = 20sqm					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	1.500	300.36	450.54	L-13
			Blacksmith	day	0.250	479.16	119.79	L-02
			b) Material					
			Scrap tyres of size 900 x 20	each	80.000	65.00	5200.00	M-165
			20 mm steel wire rope	kg	150.000	54.00	8100.00	M-175
			Add 1 per cent of cost of wire rope for clamps etc.				81.00	
			c) Machinery					
			Tractor-trolley	hour	3.000	168.75	506.25	P&M-72
			d) Overhead charges @ 0.055 on (a+b+c)				796.55	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1527.93	
			Cost for 20 sqm = a+b+c+d+e				16807.24	
			Rate per sqm = (a+b+c+d+e)/20				840.36	
						say	840.00	
8.34		B	Using Plastic/Steel Barrel, Filled with Sand					
			Provision and installation of traffic impact attenuator at abutment/pier of flyovers bridges using plastic/steel barrels 0.60 m dia and 1.0 m in height, filled with sand in three rows and tied with 20 mm steel wire rope as per approved design and drawings					
			Unit = sqm					
			Taking output = 20sqm					
			a) Labour					
			Mate	day	0.130	314.67	40.91	L-12
			Mazdoor	day	3.000	300.36	901.08	L-13
			Blacksmith	day	0.250	479.16	119.79	L-02
			b) Material					
			Plastic barrels	each	50.000			
			or					
			Steel barrels	each	50.000	115.00	5750.00	M-172
			Sand	cum	8.000	252.20	2017.60	M-001
			20 mm steel wire rope	kg	15.000	54.00	810.00	M-175
			Add 1 per cent of cost of wire rope for clamps etc.				8.10	
			c) Machinery					
			Tractor-trolley	hour	2.000	168.75	337.50	P&M-72
			d) Overhead charges @ 0.055 on (a+b+c)				549.17	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1053.42	
			Cost for 20 sqm = a+b+c+d+e				11587.57	
			Rate per sqm = (a+b+c+d+e)/20				579.38	
						say	579.00	
8.34		C	With HI - DRO cell Sandwich (Patented)					
			(In this patented HI - DRO cell system, water gets discharged from plastic tubes on impact over a pre-determined time, thus absorbing the energy)					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Providing and installing a patentend HI - DRO cell system as a traffic impact attenuators, using plastic tubes 50 cm dia, 1.2 m in height, 25 mm opening at the top, placed in three rows, filled with water and tied with a 20 mm steel wire rope					
		Unit = sqm					
		Taking output = 10sqm					
		a) Labour					
		Mate	day	0.100	314.67	31.47	L-12
		Mazdoor	day	2.500	300.36	750.90	L-13
		b) Material					
		Plastic tubes 50 cm dia, 1.2 m high	each	40.000	#VALUE!	#VALUE!	M-148
		Cost of water	KL	12.000	0.00	0.00	M-1629
		20 mm steel wire rope	kg	100.000	54.00	5400.00	M-175
		Add 1 per cent of cost of wire rope for clamps etc.				54.00	
		c) Machinery					
		Tractor-trolley	hour	2.000	168.75	337.50	P&M-72
		Water tanker 6 KL capacity	hour	2.000	111.24	222.48	P&M-17
		d) Overhead charges @ 0.055 on (a+b+c)				#VALUE!	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
		Cost for 10 sqm = a+b+c+d+e				#VALUE!	
		Rate per sqm = (a+b+c+d+e)/10				#VALUE!	
					say	#VALUE!	
8.35	Suggestive	Road Markers/Road Stud with Lense Reflector					
		Providing and fixing of road stud 100x 100 mm, die-cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973					
		Unit = Nos					
		Taking output = 50Nos					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor	day	1.000	300.36	300.36	L-13
		b) Material					
		Aluminium studs 100 x 100 mm fitted with lense reflectors	each	50.000	168.52	8426.00	M-046
		Add 10 per cent of cost of material for fixing and installation				842.60	
		c) Overhead charges @ 0.055 on (a+b)				526.99	
		d) Contractor's profit @ 0.1 on (a+b+c)				1010.85	
		Cost for 50 studs = a+b+c+d				11119.39	
		Rate per studs = (a+b+c+d)/50				222.39	
					say	222.00	
8.36	Suggestive	Traffic Cone					
		Provision of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS 873					
		Unit = Running metre					
		Taking output = 68 Nos.					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoor	day	0.500	300.36	150.18	L-13
		b) Material					
		Traffic cones with 150 mm reflective sleeve	each	68.000	422.52	28731.36	M-077

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Machinery					
		Tractor-trolley	hour	0.100	168.75	16.88	P&M-72
		d) Overhead charges @ 0.055 on (a+b+c)				1589.76	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				3049.45	
		Cost for 68 Nos. = a+b+c+d+e				33543.91	
		Rate per metre = (a+b+c+d+e)/68				493.29	
					say	<u>493.00</u>	
8.37	Suggestive	Roadside Amenities					
		A Rest areas					
		Providing plainly furnished accommodation for rest rooms, dormitories, restaurants, stalls, shops, petrol pump, telephone booth, first aid room, traffic aid post, police assistance booth, including electricity, toilet and sewerage system					
		Pricing may be done based on current plinth area rates approved by PWD/CPWD/MES for a particular zone. Area is required to be assessed for specific location as per actual site conditions					
		B Parking areas and bus laybys for trucks, buses and light vehicles					
		Pricing of parking areas may be done for the quantities of various items based on the approved dimensions and pavement design for a particular terrain and soil. Rates for items may be from respective chapters.					
		C Lawn					
		Providing a lawn planted with grass and its maintenance					
		Pricing of lawn may be done as per rates given in the chapter on horticulture for the quantities as per approved dimensions in the drawings					
8.38	Suggestive	Rumble Strips					
		Provision of 15 nos rumble strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking paint.					
		Unit = sqm					
		Taking output = 100 sqm (including gaps)					
		The rate per sqm of premix carpet and road marking may be adopted from chapter 5 & 8 respectively for the quantities calculated from approved drawings					
8.39	Suggestive	Policeman Umbrella					
		Provision of a 2 m high (floor to roof) umbrella for traffic policeman at road crossings, where necessary, installed on a raised platform, built on a central support of a steel pipe 100 mm dia, roof made of 25 mm dia steel pipe to provide covered area of 3 sqm, roofed with CGI sheets, all steel parts to be given 2 coats of paint					
		Unit = each					
		Taking output = one number					
		Earthwork	cum				
		Cement Concrete	cum				
		brick masonry or	cum				
		stone masonry	cum				
		Painting	sqm	2.500			
		a) Labour					
		Mate	day	0.090			
		Mazdoor	day	1.000			
		Blacksmith	day	1.000			
		Welder	day	0.250			
		b) Material					
		Steel pipe 100 mm dia	metre	3.500			

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Steel pipe 25 mm dia	metre	10.000			
		CGI sheets	kg	8.000			
		Add 25 per cent of cost of material for fabrication					
		Add 2 per cent of cost of material for welding consumables, J-hooks, washers etc.					
		c) Machinery					
		Tractor-trolley	hour	0.500			
		d) Overheads @ per cent on (a+b+c)					
		e) Contractors Profit@ per cent on (a+b+c+d)					
		Rate per policeman umbrella = a+b+c+d+e					
8.40	suggestive	High Mast Pole Lighting at Interchanges and Flyovers					
		Providing and erecting a high mast pole lighting with 30 m high hot dip galvanised mast designed to withstand forces exerted with wind speeds of 180 km per hour with 3 seconds gust, as per IS:875 (Part 3) - 1978, fitted with a base flange, door at the base of mast with heavy duty internal lock, lantern carriage, suitable winching arrangement for safe working load of 750 kg and high powered electrically driven power tools for raising and lowering of lantern carriage, flexible 8 core electric cable, lightening conductor, earthing terminal, and fixing 2 nos aviation obstruction lights on top of the mast, all complete as per approved design and drawings					
		This is a specialised work and is generally done by firms who specialise in such jobs. The detailed designs and estimates are submitted by the firms along with their tender for checks by the Department. The cost of this work is required to be worked out based on approved design, drawings and estimate of the lowest tender. A separate contract for this work is concluded as the contractors for road and bridge works generally do not undertake such jobs.					
8.41		Toll Plaza					
		The construction, operation and maintenance of Toll Plaza can be broken into separate items of work as under based on the approved design and drawings:-					
		a) Provision of toll collection service lane to separate different categories of vehicles for purpose of toll collection. This involves considerable increase in carriage way width					
		b) Provision of 2.5 m wide separators for different toll collection service lanes for safety					
		c) Toll booths with integrated roof cover					
		d) Barrier gates for individual lanes					
		e) Provision of building to provide facility to toll plaza personnel					
		f) Toll plaza office equipment and furniture					
		g) Water supply, electricity, sanitation, septic-tank system and drainage					
		h) Telephone, intercomes, wireless communication system					
		i) High mast lighting					
		j) Pavement marking					
		k) Overhead signs					
		l) Fixed message signs (Advance)					
		m) Variable message signs					
		n) Traffic cones and pylons					
		o) First aid post					
		p) Traffic aid post and security					
		The quantities for the above mentioned items may be calculated from the approved design and drawings and their rates adopted from respective chapters of the Standard Data Book					
8.42		Safety Devices and Signs in Construction Zones					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Provision and fixing of traffic signs for limited period at suitable locations in construction zone comprising of warning zone, approach transition zone, working zone and terminal transition zone with a minimum distance of 60 cm from the edge of the kerb in case of kerbed roads and 2 to 3 m from the edge of the carriageway in case of un-kerbed roads, the bottom edge of the lowest sign plate to be not less than 2 m above the road level, fixed on 60 mm x 60 mm x 6 mm angle iron post, founded and installed as per approved design and drawings, removed and disposed of after completion of construction work, all as per IRC:SP:55-2001					
		Unit = each					
		Taking output = one sign post					
		Following types of signs are required to be fixed in construction zones for safety of traffic					
		a) Diversion one km ahead					
		b) Traffic sign ahead					
		c) Road ahead closed					
		d) Men at work					
		e) Road narrow					
		f) Single file traffic					
		g) Right lane diverted					
		h) Left lane diverted					
		i) Right lane closed					
		j) Left lane closed					
		k) Median closed					
		l) Diversion to other carriageway					
		m) Traffic signal ahead					
		n) Two way traffic					
		o) Un - even road					
		p) Slippery road					
		q) Loose chippings					
		r) Dual carriageway ends					
		s) Diversion					
		t) Do not enter					
		u) Road closed					
		v) Stop					
		w) Slow					
		x) One way					
		y) Give way					
		z) Overtaking prohibited					
		aa) Speed limit					
		bb) Weight limit					
		cc) Height and length limit					
		dd) No stopping or standing					
		ee) Any other warning or regulatory safety sign as per site requirement and consistent with IRC:SP:55-2001 and IRC:67					
		The rate for traffic signs are already worked out and given elsewhere in this chapter. The same may be adopted.					
8.43	suggestive	Portable Barricade in Construction Zone					
		Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 45° C, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001					
		Unit = each					
		Taking output = one steel portable barricade					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.020	314.67	6.29	L-12
			Mazdoor	day	0.250	300.36	75.09	L-13
			Painter	day	0.500	479.16	239.58	L-18
			Welder	day	0.250	479.16	119.79	L-02
			b) Material					
			Angle iron 45 x 45 x 5 mm	kg	25.000	55.000	1375.00	M-178 /1000
			MS sheet 300 mm wide, 2.5 m long and 2.6 mm thick	kg	15.000	55.000	825.00	M-178 /1000
			Paint	litre	0.500	140.00	70.00	M-064
			Add 2 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				44.00	
			c) Overhead charges @ 0.055 on (a+b)				151.51	
			d) Contractor's profit @ 0.1 on (a+b+c)				290.63	
			Rate per barricade = a+b+c+d				3196.89	
						say	3197.00	
8.44	suggestive		Permanent Type Barricade in Construction Zone					
		A	With steel components					
			Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of 45° C, complete as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.050	314.67	15.73	L-12
			Mazdoor	day	0.300	300.36	90.11	L-13
			Painter	day	0.600	479.16	287.50	L-18
			Welder	day	0.300	479.16	143.75	L-02
			b) Material					
			Angle iron 50 x 50 x 5 mm, 2 m long, 2 Nos.	kg	15.000	55.000	825.00	M-178 /1000
			MS sheet of 12 SWG, 3 Nos of 200 mm width and 4 m length	kg	50.000	55.000	2750.00	M-178 /1000
			Paint	litre	1.000	140.00	140.00	M-064
			Add 1 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				35.75	
			c) Overhead charges @ 0.055 on (a+b)				235.83	
			d) Contractor's profit @ 0.1 on (a+b+c)				452.37	
			Rate per barricade = a+b+c+d				4976.03	
						say	4976.00	
8.44		B	With wooden components					
			Construction of a permanent type barricade made of wooden components, 1.5 m high from road level, fitted with 3 horizontal planks 200 mm wide and 3.66 m long on 100 x 100mm wooden vertical post, painted with yellow and white strips, 150 mm in width at an angle of 45° C, complete as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.050	314.67	15.73	L-12
			Mazdoor	day	0.300	300.36	90.11	L-13
			Painter	day	0.600	479.16	287.50	L-18
			Carpenter	day	0.600	414.80	248.88	L-04
			b) Material					
			Timber	cum	0.180	31125.04	5602.51	M-183
			Add 1 per cent of cost of timber for nuts & bolts, nails, etc.				56.03	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Overhead charges @ 0.055 on (a+b)				346.54	
		d) Contractor's profit @ 0.1 on (a+b+c)				664.73	
		Rate per barricade = a+b+c+d				7312.02	
					say	<u>7312.00</u>	
8.44	C	With bricks					
		Construction of a permanent type barricade made with brick work in mud mortar, 1.5 m high, 4 m long, 600 mm thick, plastered with cement mortar 1:6, painted with yellow and white strips					
		Unit = each					
		Taking output = one barricade					
		a) Labour					
		Mate	day	0.240	314.67	75.52	L-12
		Mazdoor	day	3.000	300.36	901.08	L-13
		Painter	day	1.000	479.16	479.16	L-18
		Mason	day	2.000	479.16	958.32	L-11
		b) Material					
		Brick	each	1800.000	7.00	12600.00	M-014
		Cement	kg	22.000	5.000	110.00	M-015 /1000
		Sand	cum	0.090	252.20	22.70	M-001
		Paint	litre	1.250	140.00	175.00	M-064
		c) Overhead charges @ 0.055 on (a+b)				842.70	
		d) Contractor's profit @ 0.1 on (a+b+c)				1616.45	
		Rate per barricade = a+b+c+d				17780.92	
					say	<u>17781.00</u>	
8.45	suggestive	Drum Delineator in Construction Zone					
		Provision of metal drum/empty bitumen drum delineator, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferential strips of alternate black and white 100 mm wide fitted with reflectors 3 Nos of 7.5 cm dia, all as per IRC:SP:55-2001					
		Unit = each					
		Taking output = one drum delineator					
		a) Labour					
		Mate	day	0.020	314.67	6.29	L-12
		Mazdoor	day	0.250	300.36	75.09	L-13
		Painter	day	0.250	479.16	119.79	L-18
		b) Material					
		Steel drum 300 mm dia 1.2 m high/empty bitumen drum	each	1.000	115.00	115.00	M-172
		Paint	litre	0.500	140.00	70.00	M-064
		c) Overhead charges @ 0.055 on (a+b)				21.24	
		d) Contractor's profit @ 0.1 on (a+b+c)				40.74	
		Rate per drum delineator = a+b+c+d				448.15	
					say	<u>448.00</u>	
8.46	suggestive	Flagman					
		Positioning of a smart flagman with a yellow vest and a yellow cap and a red flag 600 x 600 mm securely fastened to a staff 1 m in length for guiding the traffic					
		Unit = each					
		Taking output = one flagman					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor	day	1.000	300.36	300.36	L-13
		b) Material					
		Flag of red color cloth 600 x 600 mm	each	1.000	40.00	40.00	M-115
		Wooden staff for fastening of flag 25 mm dia, one m long	each	1.000	22.14	22.14	M-191
		c) Overhead charges @ 0.055 on (a+b)				20.63	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) Contractor's profit @ 0.1 on (a+b+c)				39.57	
		Rate per flagman = a+b+c+d				435.29	
					say	<u>435.00</u>	

CHAPTER-9
PIPE CULVERTS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
9.1	408	PCC 1:3:6 in Foundation					
		Plain cement concrete 1:3:6 mix with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.					
		Unit = cum					
		Taking output = 15 cum					
		a) Labour					
		Mate	day	0.640	314.67	201.39	L-12
		Mason	day	1.000	479.16	479.16	L-11
		Mazdoor	day	15.000	300.36	4505.40	L-13
		b) Material					
		40mm Aggregate at site	cum	13.800	999.65	13795.17	M-042
		Sand at site	cum	6.900	252.20	1740.18	M-001
		Cement at site	tonne	3.300	5000.00	16500.00	M-015
		Cost of water	KL	18.000	0.00	0.00	M-1629
		c) Machinery					
		Concrete mixer 0.4/ 0.28 cum	hour	6.000	412.64	2475.84	P&M-003
		Generator set 33 KVA	hour	6.000	342.36	2054.16	P&M-094(ii)
		Water tanker 6 KL capacity	hour	3.000	111.24	333.72	P&M-17
		d) Overhead charges @ 0.055 on (a+b+c)				2314.68	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				4439.97	
		Cost for 15 cum = a+b+c+d+e				48839.66	
		Rate per cum = (a+b+c+d+e)/15				3255.98	
					say	3256.00	
		Note Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.					
9.2	2900	Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Single Row .					
		Laying Reinforced cement concrete pipe NP4/prestressed concrete pipe for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets					
		Unit = metre					
		Taking output = 12.5 metres (5 pipes of 2.5 m length each)					
		A 1000 mm dia					
		a) Labour					
		Mate	day	0.180	314.67	56.64	L-12
		Mason	day	0.500	479.16	239.58	L-11
		Mazdoor	day	4.000	300.36	1201.44	L-13
		b) Material					
		Sand at site	cum	0.070	252.20	17.65	M-001
		Cement at site	tonne	0.050	5000.00	250.00	M-015
		RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	12.500	4732.00	59150.00	M-068
		Granular material passing 5.6 mm sieve for bedding	cum	4.500	190.00	855.00	M-020
		c) Overhead charges @ 0.055 on (a+b)				3397.37	
		d) Contractor's profit @ 0.1 on (a+b+c)				6516.77	
		Cost for 12.5 metres = a+b+c+d				71684.45	
		Rate per metre = (a+b+c+d)/12.5				5734.76	
					say	5735.00	
		Note 1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .					
		2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
9.2		B	1200 mm dia					
			a) Labour					
			Mate	day	0.280	314.67	88.11	L-12
			Mason	day	1.000	479.16	479.16	L-11
			Mazdoor	day	6.000	300.36	1802.16	L-13
			b) Material					
			Sand at site	cum	0.090	252.20	22.70	M-001
			Cement at site	tonne	0.070	5000.00	350.00	M-015
			RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	12.500	5730.00	71625.00	M-069
			Granular material passing 5-6 mm sieve for class bedding	cum	5.000	190.00	950.00	M-020
			c) Overhead charges @ 0.055 on (a+b)				4142.44	
			d) Contractor's profit @ 0.1 on (a+b+c)				7945.96	
			Cost for 12.5 metres = a+b+c+d				87405.52	
			Rate per metre = (a+b+c+d)/12.5				6992.44	
						say	6992.00	
		Note	1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .					
			2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections					
9.3	2900		Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Double Row .					
			Laying Reinforced cement concrete pipe NP4 / prestressed concrete pipe for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .					
			Unit = metre					
			Taking output = 12.5 metres (10 pipes of 2.5 m length each in two rows.)					
		A	1000 mm dia					
			a) Labour					
			Mate	day	0.360	314.67	113.28	L-12
			Mason	day	1.000	479.16	479.16	L-11
			Mazdoor	day	8.000	300.36	2402.88	L-13
			b) Material					
			Sand at site	cum	0.140	252.20	35.31	M-001
			Cement at site	tonne	0.100	5000.00	500.00	M-015
			RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	25.000	4732.00	118300.00	M-068
			Granular material passing 5.6 mm sieve for bedding	cum	12.500	190.00	2375.00	M-020
			c) Overhead charges @ 0.055 on (a+b)				6831.31	
			d) Contractor's profit @ 0.1 on (a+b+c)				13103.69	
			Cost for 12.5 metres = a+b+c+d				144140.63	
			Rate per metre = (a+b+c+d)/12.5				11531.25	
		Note	1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .					
			2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections					
9.3		B	1200 mm dia					
			a) Labour					
			Mate	day	0.560	314.67	176.22	L-12

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mason	day	2.000	479.16	958.32	L-11
			Mazdoor	day	12.000	300.36	3604.32	L-13
			b) Material					
			Sand at site	cum	0.180	252.20	45.40	M-001
			Cement at site	tonne	0.140	5000.00	700.00	M-015
			RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	25.000	5730.00	143250.00	M-069
			Granular material passing 5-6 mm sieve for class bedding	cum	13.750	190.00	2612.50	M-020
			c) Overhead charges @ 0.055 on (a+b)				8324.07	
			d) Contractor's profit @ 0.1 on (a+b+c)				15967.08	
			Cost for 12.5 metres = a+b+c+d				175637.90	
			Rate per metre= (a+b+c+d)/12.5				14051.03	
		Note	1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .			say	<u>14051.00</u>	
			2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections					

CHAPTER- 10
MAINTENANCE OF ROADS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
10.1	3002	Restoration of Rain Cuts					
		Restoration of rain cuts with soil, moorum, gravel or a mixture of these, clearing the loose soil, benching for 300 mm width, laying fresh material in layers not exceeding 250 mm and compacting with plate compactor or power rammers to restore the original alignment, levels and slopes					
		Unit = cum					
		Taking output = 10 cum					
		a) Labour					
		Mate	day	0.080	314.67	25.17	L-12
		Mazdoor	day	2.000	300.36	600.72	L-13
		b) Machinery					
		Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.130	1000.00	130.00	P&M-49
		Tipper (L is average lead in km for borrow earth)	tonne.km	12 x L	2.27	27.24	Lead =1 km & P&M-75
		Add 10 per cent of cost of carriage towards loading and unloading charges.				2.72	
		Plate compactor	hour	0.500	142.99	71.50	P&M-019
		c) Overhead charges @ 0.055 on (a+b)				47.15	
		d) Contractor's profit @ 0.1 on (a+b+c)				90.45	
		Cost for 10 cum = a+b+c+d				994.96	
		Rate per cum = (a+b+c+d)/10				99.50	
					say	99.00	
		Note Only 75 per cent of fresh material has been provided as 25 per cent can be retrieved at site from earth that is flown down the slope in the form of slurry and deposited at the foot of the rain cuts					
10.2	3003	Maintenance of Earthen Shoulder (filling with fresh soil)					
		Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.					
		Unit = sqm					
		Taking output = 100 sqm					
		Assuming average thickness of filling to be 150 mm					
		Quantity of fresh material = 15 cum					
		a) Labour					
		Mate	day	0.180	314.67	56.64	L-12
		Mazdoor	day	4.500	300.36	1351.62	L-13
		b) Machinery					
		Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.250	1000.00	250.00	P&M-49
		Tipper (L is average lead in km for borrow earth)	tonne.km	24xL	2.27	54.48	Lead =1 km & P&M-75
		Add 10 per cent of cost of transportation to cover cost of loading and unloading				5.45	
		Plate compactor @ 25 sqm per hour	hour	12.000	142.99	1715.90	P&M-019
		c) Overhead charges @ 0.055 on (a+b)				188.88	
		d) Contractor's profit @ 0.1 on (a+b+c)				362.30	
		Cost for 100 sqm = a+b+c+d				3985.26	
		Rate per sqm = (a+b+c+d)/100				39.85	
					say	40.00	
10.3	3003	Maintenance of Earth Shoulder (stripping excess soil)					
		Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor					
		Unit = sqm					
		Taking output = 100 sqm					
		Assuming average depth of stripping as 75 mm					
		Quantity of earth cutting involved = 7.5 cum					
		a) Labour					
		Mate	day	0.100	314.67	31.47	L-12
		Mazdoor	day	2.500	300.36	750.90	L-13
		b) Machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Plate compactor @ 25 sqm per hour	hour	4.000	142.99	571.97	P&M-019
			c) Overhead charges @ 0.055 on (a+b)				74.49	
			d) Contractor's profit @ 0.1 on (a+b+c)				142.88	
			Cost for 100 sqm = a+b+c+d				1571.71	
			Rate per sqm on = (a+b+c+d)/100				15.72	
						say	16.00	
		Note	The earth stripped from earthen shoulders to be dumped on the side slopes locally for disposal.					
10.4	3004.2		Filling Pot-holes and Patch Repairs with open-Graded Premix surfacing, 20mm.					
			Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2					
			Unit = Sqm					
			Taking out put = 10250 sqm (205 cum)(405 tonne)					
			a) Labour					
			Mate	Day	3.760	314.67	1183.16	L-12
			Mazdoor	Day	90.000	300.36	27032.40	L-13
			Mazdoor skilled	Day	4.000	414.80	1659.20	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	6.000	293.76	1762.56	P&M-032
			HMP 100-110 TPH Capacity	hour	6.000	25868.00	155208.00	P&M-47
			Tipper 10 tonnes capacity	hour	45.000	1010.00	45450.00	P&M-13
			Smooth wheeled roller 8-10 tonnes	hour	12.000	803.00	9636.00	P&M-011
			c) Material					
			Crushed stone aggregates nominal size 13.2mm @ 0.18 cum per 10 sqm	cum	184.500	999.25	184361.63	M-040
			Crushed stone aggregates nominal size 11.2mm @ 0.09 cum/10 sqm	cum	92.250	899.36	82965.96	M-039
			Bitumen 80/100 @ 14.6 kg per 10 sqm	tonne	14.970	41471.00	620820.87	M-048
			Bitumen emulsion for tack coat including vertical sides of pot hole.	tonne	2.460	42199.00	103809.54	M-105
			d) Overhead charges @ 0.055 on (a+b+c)				67863.91	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				130175.32	
			Cost for 10250 sqm = a+b+c+d+e				1431928.55	
			Rate per sqm = (a+b+c+d+e)/10250				139.70	
						say	140.00	
10.5	3004.2		Filling Pot-holes and Patch Repairs with Bituminous concrete, 40mm.					
			Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2					
			Unit = Sqm					
			Taking out put = 4900 sqm (196 cum)(450 Tonnes)					
			a) Labour					
			Mate	Day	2.920	314.67	918.84	L-12
			Mazdoor	Day	70.000	300.36	21025.20	L-13
			Mazdoor skilled	Day	3.000	414.80	1244.40	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	6.000	293.76	1762.56	P&M-032
			HMP 100-110 TPH Capacity	hour	6.000	25868.00	155208.00	P&M-47
			Tipper 10 tonnes capacity	hour	45.000	1010.00	45450.00	P&M-13
			Smooth wheeled roller 8-10 tonnes	hour	12.000	803.00	9636.00	P&M-011
			c) Material					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			i) Bitumen	tonne	22.500	41471.00	933097.50	M-048
			ii) Bitumen emulsion for tack coat .	tonne	1.180	42199.00	49794.82	M-105
			iii) Aggregates					
			Grading I - 19mm(Nominal size)					
			20-10mm 35 per cent	cum	99.750	1330.60	132727.35	M-035
			10-5 mm 23 per cent	cum	65.550	999.00	65484.45	M-026,M-010
			5mm and below 40 per cent	cum	114.000	476.60	54332.40	M-028
			Filler 2 per cent by weight of aggregate	tonne	8.620	4703.60	40545.03	M-293
			Add 5 per cent for wastage				2027.25	
			or					
			Grading-II 13mm (Nominal size)					
			13.2-10 mm 30 per cent	cum	85.500	1162.00	99351.00	M-034
			10-5 mm 25 per cent	cum	71.250	999.00	71178.75	M-026
			5 mm and Below43 per cent	cum	122.550	476.60	58407.33	M-028
			Filler 2 per cent	tonne	8.620	4703.60	40545.03	M-293
			Add 5 per cent for wastage				2027.25	
			Any one of the above alternatives of aggregate i.e. 19mm or 13mm nominal size may be adopted as per approved design.					
10.5		(i)	for grading I Material					
			d) Overhead charges @ 0.055 on (a+b+c)				83228.96	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				159648.28	
			Cost for 4900 cum = a+b+c+d+e				1756131.03	
			Rate per cum = (a+b+c+d+e)/4900				358.39	
						say	<u>358.00</u>	
							#REF!	
10.5		(ii)	for grading II Material					
			d) Overhead charges @ 0.055 on (a+b+c)				81930.57	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				157157.72	
			Cost for 4900 cum = a+b+c+d+e				1728734.97	
			Rate per cum = (a+b+c+d+e)/4900				352.80	
						say	<u>353.00</u>	
							#REF!	
		Note	For detailed working of quantities of aggregates, refer item 5.8 of chapter 5					
10.6	3004.3.3		Crack Filling					
			Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.					
			Unit = Running Meter					
			Taking out put = 500m					
			a) Labour					
			Mate	day	0.040	314.67	12.59	L-12
			Mazdoor	day	1.000	300.36	300.36	L-13
			b) Material					
			Slow-curing bitumen emulsion	Kg	33.000	42.20	1392.57	M-105
			Stone crusher dust	cum	0.020	271.35	5.43	M-004
			c) Overhead charges @ 0.055 on (a+b)				94.10	
			d) Contractor's profit @ 0.1 on (a+b+c)				180.50	
			Cost for 500sqm = a+b+c+d				1985.55	
			Rate per meter = (a+b+c+d+e)/500				3.97	
						say	<u>4.00</u>	
10.7	3004.4		Dusting					
			Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.					
			Unit = Sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	2.000	300.36	600.72	L-13
			b) Material					
			Stone crusher dust finer than 3mm with not more than 10 per cent passing 0.075 sieve.	cum	6.250	271.35	1695.94	M-004
			c) Overhead charges @ 0.055 on (a+b)				127.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				244.95	
			Cost for 3500sqm = a+b+c+d				2694.48	
			Rate per meter = (a+b+c+d)/3500				0.77	
						say	0.80	
10.8	(A) 3004.3.2		Fog Seal	sqm			38.00	Item 5.17
	(B) 3004.3.4		Crack Prevention courses.					
		(i)	Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm			57.00	Item 5.21 Case-I
		(ii)	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm			69.00	Item 5.21 Case-II
		(iii)	Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 per cent	sqm			91.00	Item 5.21 Case-IV
		(iv)	Bitumen Impregnated Geotextile	sqm			111.00	Item 5.21 Case-IV
10.8	(C) 3004.5		Slurry Seal					
		(i)	5 mm thickness	sqm			66.00	Item 5.15 Case-I
		(ii)	3 mm thickness	sqm			46.00	Item 5.15 Case-II
		(iii)	1.5 mm thickness	sqm			28.00	Item 5.15 Case-III
10.8	(D) 3004.6		Surface Dressing for maintenance works.					
		(i)	19 mm nominal chipping size	sqm			84.00	Item 5.9 Case-I
		(ii)	13 mm nominal size chipping	sqm			66.00	Item 5.9 Case-II
			The above mentioned items have already been included in chapter 5.					
10.9	3005.1		Repair of Joint Grooves with Epoxy Mortar					
			Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete					
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	314.67	12.59	L-12
			Mazdoor	day	0.500	300.36	150.18	L-13
			Chiseller	day	0.500	414.80	207.40	L-05
			b) Material					
			Epoxy primer	kg	2.500	116.35	290.88	M-113
			Epoxy compound with accessories for preparing epoxy mortar	kg	10.000	350.00	3500.00	M-111
			c) Machinery					
			Air compressor 250 cfm for cleaning	hour	0.050	293.76	14.69	P&M-032
			d) Overhead charges @ 0.055 on (a+b+c)				229.67	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				440.54	
			Cost for 10 metres = a+b+c+d+e				4845.93	
			Rate per metre = (a+b+c+d+e)/10				484.59	
						say	485.00	
10.10	3005.2		Repair of old Joints Sealant					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Removal of existing sealant and re sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material					
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	314.67	12.59	L-12
			Mazdoor	day	0.500	300.36	150.18	L-13
			b) Material					
			Primer	kg	0.250	97.25	24.31	M-154
			Sealant	kg	1.000	20.00	20.00	M-135
			c) Machinery					
			Air compressor 250 cfm for cleaning	hour	0.050	293.76	14.69	P&M-032
			d) Overhead charges @ 0.055 on (a+b+c)				12.20	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				23.40	
			Cost for 10 metres = a+b+c+d+e				257.36	
			Rate per metre = (a+b+c+d+e)/10				25.74	
						say	<u>25.70</u>	
10.11	3000		Hill Side Drain Clearance					
			Removal of earth from the choked hill side drain and disposing it on the valley side manually					
			Unit = running metre					
			Taking output = 10 metres					
			Assuming muck causing choking of drain to be 0.2 cum per metre, quantity of earth to be removed for 10 metres = 2 cum					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	1.000	300.36	300.36	L-13
			b) Overhead charges @ 0.055 on (a+b)				17.90	
			c) Contractor's profit @ 0.1 on (a+b)				34.34	
			Cost for 10 metres = a+b+c				377.78	
			Rate per metre = (a+b+c)/10				37.78	
						say	<u>37.80</u>	
10.12	3000		Land Slide Clearance in soil					
			Clearance of land slides in soil and ordinary rock by a bulldozer D 80 A-12, 180 HP and disposal of the same on the valley side					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	314.67	12.59	L-12
			Mazdoor	day	1.000	300.36	300.36	L-13
			b) Machinery					
			Dozer 80 HP @ 60 cum per hour	hour	1.670	1500.00	2505.00	P&M-42
			c) Overhead charges @ 0.055 on (a+b)				154.99	
			d) Contractor's profit @ 0.1 on (a+b+c)				297.29	
			Cost for 100 cum = a+b+c+d				3270.23	
			Rate per cum = (a+b+c+d)/100				32.70	
						say	<u>33.00</u>	
		Note	Land Slide clearance involves pushing of loose earth slided on the road surface from hill face on the valley side. Since no cutting of original ground is involved, the output of dozer has been taken as 60 cum per hour for soil, ordinary rock and blasted hard rock. However, if there are objection to disposing of earth on valley side, additional resources for its disposal shall be considered as per site conditions.					
10.13	3000		Landslide Clearance in Hard Rock Requiring Blasting					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Clearing of land slide in hard rock requiring blasting for 50 per cent of the boulders and disposal of the same on the valley side.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.090	314.67	28.32	L-12
			Mazdoor	day	1.500	300.36	450.54	L-13
			Driller	day	0.750	314.67	236.00	L-06
			Blaster	day	0.070	414.80	29.04	L-03
			b) Machinery					
			Dozer D 80 A-12,180 HP @ 60 cum per hour	hour	1.670	1500.00	2505.00	P&M-42
			Air compressor 250 cfm with two jack hammer	hour	2.500	293.76	734.40	P&M-032
			c) Materials					
			Gelatine 80 per cent @ 35 kg per 100 cum	kg	17.500	120.72	2112.60	M-059
			Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	70.000	5.75	402.21	M-058 /100
			c) Overhead charges @ 0.055 on (a+b)				357.40	
			d) Contractor's profit @ 0.1 on (a+b+c)				685.55	
			Cost for 100 cum = a+b+c+d+e				7541.05	
			Rate per cum = (a+b+c+d+e)/100				75.41	
						say	<u>75.00</u>	
		Note	Credit for the rock if found acceptable as construction material shall be afforded					
10.14	3000		Snow Clearance on Roads with Dozer					
			Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side					
			Unit = cum					
			Taking output = 5000 cum					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	2.000	300.36	600.72	L-13
			b) Machinery					
			Dozer D 80 A-12,180 HP @ 850 cum per hour	hour	5.880	1500.00	8820.00	P&M-42
			c) Overhead charges @ 0.055 on (a+b)				519.52	
			d) Contractor's profit @ 0.1 on (a+b+c)				996.54	
			Cost for 5000 cum = a+b+c+d				10961.96	
			Rate per cum = (a+b+c+d)/5000				2.19	
						say	<u>2.20</u>	
		Note	i) Labour provided will not be cutting the snow. They will be guiding the dozer operator on the alignment of the road as entire surface gets covered with snow and the edges of the road are not visible and for changing the blade angle. Also they will keep a watch on the hill side for any eventuality of avalanches, slide etc					
10.15	3000		Snow Clearance on Roads with Snow Blowers					
			Snow clearance from road surface by a snow blower and disposing on the valley side.					
			Unit = cum					
			Taking output = 3600 cum					
			a) Labour					
			Mate	day	0.080	314.67	25.17	L-12
			Mazdoor	day	2.000	300.36	600.72	L-13
			b) Machinery					
			Snow blower equipment 140 HP @ 600 cum per hour	hour	6.000	Value	#VALUE!	P&M-100
			c) Overhead charges @ 0.055 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost for 3600 cum (a+b+c+d)				#VALUE!	
			Rate per cum = (a+b+c+d)/3600				#VALUE!	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	<u>#VALUE!</u>	

CHAPTER-11
HORTICULTURE

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.1	307	Spreading of Sludge Farm Yard Manure or/and good Earth					
		Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately)					
		Unit = cum					
		Taking output = 15 cum					
		a) Labour					
		Mate	day	0.040	314.67	12.59	L-12
		Mazdoor	day	1.000	300.36	300.36	L-13
		b) Overhead charges @ 0.055 on (a)				17.21	
		c) Contractor's profit @ 0.1 on (a+b)				33.02	
		Cost for 15 cum = a+b+c				363.17	
		Rate per cum = (a+b+c)/15				24.21	
					say	24.20	
11.2	307	Grassing with 'Doobs' Grass					
		Grassing with 'Doobs' grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for moving including supplying good earth if needed					
		Unit = sqm					
		Taking output = 100 sqm					
	(i)	In rows 15 cm apart in either direction					
		a) Labour					
		Mate	day	0.170	314.67	53.49	L-12
		Mazdoor for grassing	day	0.750	300.36	225.27	L-13
		Mazdoor for maintenance for 30 days	day	1.000	300.36	300.36	L-13
		b) Machinery					
		Water tanker 6 KL capacity	hour	0.500	111.24	55.62	P&M-17
		c) Material					
		Doob grass	kg	100.000	3.29	329.00	M-127
		d) Overhead charges @ 0.055 on (a+b+c)				53.01	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				101.67	
		Cost for 100 sqm = a+b+c+d+e				1118.42	
		Rate per sqm = (a+b+c+d+e)/100				11.18	
					say	11.20	
11.2	(ii)	In rows 7.5 cm apart in either direction					
		a) Labour					
		Mate	day	0.220	314.67	69.23	L-12
		Mazdoor for grassing	day	1.250	300.36	375.45	L-13
		for maintenance for 30 days	day	1.000	300.36	300.36	L-13
		b) Machinery					
		Water tanker 6 KL capacity	hour	0.750	111.24	83.43	P&M-17
		c) Material					
		Doob grass	kg	200.000	3.29	658.00	M-127
		d) Overhead charges @ 0.055 on (a+b+c)				81.76	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				156.82	
		Cost for 100 sqm = a+b+c+d+e				1725.05	
		Rate per sqm = (a+b+c+d+e)/100				17.25	
					say	17.30	
	Note	In the case of horticulture one mate has been provided for every 10 mazdoors as maintenance of grass and plants require more care.					
11.3	307	Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod					
		Making lawns including ploughing and breaking of clod, removal of rubbish, dressing and supplying doobs grass roots and planting at 15 cm apart, including supplying and spreading of farm yard manure at rate of 0.18 cum per 100 sqm					
		Unit = sqm					
		Taking output = 100 sqm					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.150	314.67	47.20	L-12
		Mazdoor for preparation of ground	day	0.500	300.36	150.18	L-13
		Mali for fetching doobs grass roots and grassing at 15 cm apart	day	1.000	314.67	314.67	L-09
		b) Machinery					
		Water tanker6 KL capacity	hour	0.500	111.24	55.62	P&M-17
		Tractor with filler	hour	0.010	168.75	1.69	P&M-72
		c) Material					
		Supply of farm yard manure at site of work	cum	0.180	571.58	102.88	M-073
		Fine grass	kg	100.000	3.29	329.00	M-128
		d) Overhead charges @ 0.055 on (a+b+c)				55.07	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				105.63	
		Cost for 100 sqm = a+b+c+d+e				1161.94	
		Rate per sqm = (a+b+c+d+e)/100				11.62	
					say	11.60	
11.4	307	Maintenance of Lawns or Turfing of Slopes					
		Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc					
		Unit = sqm					
		Taking output = 100 sqm					
		a) Labour					
		Mali	day	10.000	314.67	3146.70	L-09
		b) Machinery					
		Water tanker6 KL capacity	hour	15.000	111.24	1668.60	P&M-17
		c) Material					
		Cost of water	KL	90.000	0.00	0.00	M-1629
		d) Overhead charges @ 0.055 on (a+b+c)				264.84	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				508.01	
		Cost for 100 sqm = a+b+c+d+e				5588.16	
		Rate per sqm = (a+b+c+d+e)/100				55.88	
					say	56.00	
11.5	307	Turfing Lawns with Fine Grassing including Ploughing, Dressing					
		Turfing lawns with fine grassing including ploughing, dressing including breaking of clods, removal of rubbish, dressing and supplying doobs grass roots at 10 cm apart, including supplying and spreading of farm yard manure at rate of 0.6 cum per 100 sqm					
		Unit = sqm					
		Taking output = 100 sqm					
		a) Labour					
		Mate	day	0.250	314.67	78.67	L-12
		Mazdoor for preparation of ground	day	1.000	300.36	300.36	L-13
		Mali for fetching doobs grass roots hedges and grassing at 10 cm apart	day	1.500	314.67	472.01	L-09
		b) Machinery					
		Water tanker6 KL capacity	hour	0.500	111.24	55.62	P&M-17
		Tractor with tiller	hour	0.010	168.75	1.69	P&M-72
		c) Material					
		Supply of farm yard manure at site of work @ 0.6 cum per 100 sqm	cum	0.600	571.58	342.95	M-073
		Fine grass	kg	100.000	3.29	329.00	M-128
		d) Overhead charges @ 0.055 on (a+b+c)				86.92	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				166.72	
		Cost for 100 sqm = a+b+c+d+e				1833.92	
		Rate per sqm = (a+b+c+d+e)/100				18.34	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	<u>18.30</u>	
11.6	307		Maintenance of Lawns with Fine Grassing for the First Year					
			Maintenance of lawns with fine grassing for the first year including watering etc					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mali	day	10.000	314.67	3146.70	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	20.000	111.24	2224.80	P&M-17
			c) Material					
			Cost of water	KL	60.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				295.43	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				566.69	
			Cost for 100 sqm = a+b+c+d+e				6233.63	
			Rate per sqm = (a+b+c+d+e)/100				62.34	
						say	<u>62.00</u>	
11.7	307		Planting and Maintaining of Permanent Hedges					
		(a)	Planting permanent hedges including digging of trenches					
			Planting permanent hedges including digging of trenches, 60 cm wide and 45 cm deep, refilling the excavated earth mixed with farmyard manure, supplied at the rate of 4.65 cum per 100 metres and supplying and planting hedge plants at 30 cm apart					
			Unit = Running metre					
			Taking output = 100metre					
			a) Labour					
			Mate	day	1.400	314.67	440.54	L-12
			Mazdoor for digging of trench 60 cm wide and 45 cm deep	day	10.000	300.36	3003.60	L-13
			Mazdoor for refilling the excavated earth mixed with cow dung, preparation of ground and digging of plant, from the nursery carriage to site and planting in position	day	4.000	300.36	1201.44	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	111.24	55.62	P&M-17
			c) Material					
			Cost of hedge plants 2 rows at 30 cm apart	each	2x340	24.65	16762.00	M-131
			Supply of farm yard manure at site of work	cum	4.670	571.58	2669.28	M-073
			Pesticide	kg	0.250	77.20	19.30	M-145
			Cost of water	KL	3.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				1328.35	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2548.01	
			Cost for 100 metres = a+b+c+d+e				28028.14	
			Rate per metre = a+b+c+d+e)/100				280.28	
						say	<u>280.00</u>	
		(b)	Maintenance of hedge for one year					
			Unit = Running metre					
			Taking output = 100 m					
			a) Labour					
			Mate	day	3.000	314.67	944.01	L-12
			Mazdoor	day	30.000	300.36	9010.80	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	5.000	111.24	556.20	P&M-17
			c) Material					
			Manure sludge/Farm yard manure	cum	2.000	571.58	1143.16	M-073
			Pesticide	kg	0.500	77.20	38.60	M-145

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cost of water	KL	30.000	0.00	0.00	M-1629
			Cost of hedge plants @ 10 per cent casualty	each	68.000	24.65	1676.20	M-131
			d) Overhead charges @ 0.055 on (a+b+c)				735.29	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1410.43	
			Cost for 100 metres = a+b+c+d+e				15514.69	
			Rate per metre = a+b+c+d+e)/100				155.15	
						say	155.00	
11.8	307		Planting and Maintaining of Flowering Plants and Shrubs					
		(a)	Planting flowering plants and shrubs in central verge					
			Unit = Running metres 200 plants and 800 shrubs in two rows in one km length of road where width of verge is 3m and above.					
			Taking output = 1000 metres					
		a)	Labour					
			Mate	day	1.200	314.67	377.60	L-12
			Mazdoor	day	12.000	300.36	3604.32	L-13
		b)	Machinery					
			Water tanker 6 KL capacity	hour	6.000	111.24	667.44	P&M-17
		c)	Material					
			Plants	each	200.000	32.81	6562.00	M-116
			Shrubs	each	800.000	15.00	12000.00	M-168
			Manure sludge/Farm yard manure	cum	63.640	571.58	36375.35	M-073
			Pesticide	kg	0.500	77.20	38.60	M-145
			Cost of water	KL	36.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				3279.39	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6290.47	
			Rate per Km = (a+b+c+d+e)				69195.18	
						say	69195.00	
11.8		(b)	Maintenance of flowering plants and shrubs in central verge for one year					
			Unit = km					
			Taking output = one km					
		a)	Labour					
			Mate	day	36.000	314.67	11328.12	L-12
			Mazdoor	day	365.000	300.36	109631.40	L-13
		b)	Machinery					
			Water tanker 6 KL capacity	hour	90.000	111.24	10011.60	P&M-17
		c)	Material					
			Manure Sludge / farm yard manure at site	cum	10.000	571.58	5715.80	M-073
			Cost of water	KL	180.000	0.00	0.00	M-1629
			Replacement of casualties @ 10 per cent					
			Plants	each	20.000	32.81	656.20	M-116
			Shrubs	each	80.000	15.00	1200.00	M-168
			Pesticides	kg	1.500	77.20	115.80	M-145
			d) Overhead charges @ 0.055 on (a+b+c)				7626.24	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				14628.52	
			Rate per Km for one year = (a+b+c+d+e)				160913.68	
						say	160914.00	
11.9	307		Planting of Trees and their Maintenance for one Year					
			Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year					
			Unit = Each					
			Taking output = 10 trees					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Labour					
			Mate	day	1.700	314.67	534.94	L-12
			Mazdoor for planting	day	2.000	300.36	600.72	L-13
			Mazdoor for maintenance for one year	day	15.000	300.36	4505.40	L-13
			b) Machinery					
			Water tanker 6 KL capacity	hour	2.000	111.24	222.48	P&M-17
			c) Material					
			Sapling 2 m high 25 mm dia	each	10.000	20.00	200.00	M-164
			Farm yard manure	cum	0.940	571.58	537.29	M-073
			Pesticide	kg	0.500	77.20	38.60	M-145
			Cost of water	KL	12.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				365.17	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				700.46	
			Cost for 10 trees = a+b+c+d+e				7705.05	
			Rate per trees = (a+b+c+d+e)/10				770.51	
						say	771.00	
11.10	308		Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil					
			Renovation lawns including, weeding, forking the ground, top dressing with forked soil, watering and maintenance the lawns, for 30 days or more, till the grass forms a thick lawn, free from weeds, and fit for moving and disposal of rubbish as directed, including supplying good earth, if needed but excluding the cost of well decayed farm yard manure					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.120	314.67	37.76	L-12
			Mazdoor	day	3.000	300.36	901.08	L-13
			b) Machinery					
			Water tanker 6 KL capacity	hour	0.500	111.24	55.62	P&M-17
			c) Material					
			Cost of water	KL	3.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				54.70	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				104.92	
			Cost for 100 sqm = a+b+c+d+e				1154.07	
			Rate per sqm = (a+b+c+d+e) / 100				11.54	
						say	11.50	
11.11	308.2		Supply at Site Well Decayed Farm Yard Manure					
			Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking					
			Unit = cum					
			Taking output = one cum					
			a) Material					
			a) Cost of well decayed farm yard manure duly screened, loading, carriage, unloading and stacking at site	cum	1.000	571.58	571.58	M-073
			b) Overhead charges @ 0.055 on (a)				31.44	
			c) Contractor's profit @ 0.1 on (a+b)				60.30	
			Rate per cum = (a+b+c)				663.32	
							663.00	
11.12	308.20		Supply at Site of Work/ Store-Deoiled Neem Cake					
			Supply at site of work/ store-deoiled neem cake duly packed in used gunny bags					
			Unit = quintal					
			Taking output = one quintal					
			a) Cost, carriage, loading, unloading and stacking in store/site	quintal	1.000			

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Overheads@ per cent on (a)					
			c) Contractors profit@ per cent on (a+b)					
			Rate per quintal = a+b+c				VALUE	
11.13	308.2		Supplying Sludge					
			Supplying sludge duly stacked at site/ store					
			Unit = cum					
			Taking output = one cum					
			a) Cost of sludge including carriage, loading, unloading and stacking at site	cum	1.000			
			b) Overheads@ per cent on (a)					
			c) Contractors profit@ per cent on (a+b)					
			Rate per cum = a+b+c				VALUE	
11.14		New	Half Brick Circular Tree Guard, in 2nd Class Brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground					
			Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	314.67	15.73	L-12
			Mason	day	0.250	479.16	119.79	L-11
			Mazdoor	day	0.250	300.36	75.09	L-13
			b) Material					
			Brick 2nd class including carriage	each	230.000	7.00	1610.00	M-014
			Cement mortar 1:6	cum	0.025	2060.00	51.50	Item 12.6 (D)
			c) Overhead charges @ 0.055 on (a+b)				102.97	
			d) Contractor's profit @ 0.1 on (a+b+c)				197.51	
			Rate per tree Guard = a+b+c+d				2172.59	
						say	2173.00	
							#REF!	
			Edging with 2nd class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 metres					
			Unit = Metre					
			Taking output= 10 metres					
			a) Labour					
			Mate	day	0.002	314.67	0.63	L-12
			Mason	day	0.050	479.16	23.96	L-11
			Mazdoor	day	0.050	300.36	15.02	L-13
			b) Material					
			Brick 2nd class including carriage	each	50.000	7.00	350.00	M-014
			c) Overhead charges @ 0.055 on (a+b)				21.43	
			d) Contractor's profit @ 0.1 on (a+b+c)				41.10	
			Cost for 10 metre = a+b+c+d				452.14	
			Rate per metre = (a+b+c+d)/10				45.21	
						say	45.20	
11.16		New	Making Tree Guard 53 cm dia and 1.3 m High as per Design from Empty Bitumen Drums					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Making tree guard 53 cm dia and 1.3 m high as per design from empty bitumen drum, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets, complete in all respect					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.020	314.67	6.29	L-12
			Blacksmith	day	0.150	479.16	71.87	L-02
			Mazdoor	day	0.070	300.36	21.03	L-13
			b) Material					
			Empty bitumen drum	each	1.000	115.00	115.00	M-172
			MS sheet 50 x 0.5 mm	kg	0.650	55.00	35.75	M-178 /1000
			Rivets 6 mm dia and 10 mm in length	each	22.000	6.04	132.88	M-163
			c) Overhead charges @ 0.055 on (a+b)				21.06	
			d) Contractor's profit @ 0.1 on (a+b+c)				40.39	
			Rate for each tree guard = a+b+c+d				444.27	
						say	<u>444.00</u>	
11.17		New	Making Tree Guard 53 cm dia and 2 Metre High as per Design from Empty Bitumen Drums					
			Making tree guard 53 cm dia and 2 metres high as per design from empty bitumen drums, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing four legs 40 cm long of 30 x 3 mm MS riveted to tree guard and providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets complete in all respects					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate		0.040	314.67	12.59	L-12
			Blacksmith	day	0.200	479.16	95.83	L-02
			Mazdoor		0.200	300.36	60.07	L-13
			b) Material					
			Empty bitumen drum	each	1.500	115.00	172.50	M-172
			MS sheet 50 x 0.5 mm	kg	0.650	55.00	35.75	M-178 /1000
			Rivets 6 mm dia and 10 mm in length	each	50.000	6.04	302.00	M-163
			MS plate 30 x 3 mm	kg	1.300	55.00	71.50	M-178 /1000
			c) Overhead charges @ 0.055 on (a+b)				41.26	
			d) Contractor's profit @ 0.1 on (a+b+c)				79.15	
			Rate for each tree guard = a+b+c+d				870.65	
						say	<u>871.00</u>	
11.18		New	Wrought Iron and Mild Steel Welded Work					
			Wrought iron and mild steel welded work (using angles, square bars, tees and channel grills, grating frames, gates and tree guards of any size and design etc. including cost of screens and welding rods or bolts and nuts complete fixed in position but without the cost of excavation and concrete for fixing which will be paid separately					
			Unit = quintal					
			Taking output = one quintal					
			a) Labour					
			Mate	day	0.450	314.67	141.60	L-12
			Blacksmith/ welder for cutting to design and shape and jointing	day	2.000	479.16	958.32	L-02
			Mazdoor for fixing and helper for Blacksmith/welder	day	2.500	300.36	750.90	L-13

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Material					
			Angle, tees, channels etc	quintal	1.050	5500.00	5775.00	M-178 /10
			Deduct the cost of scrap	quintal	0.050	-1833.33	(91.67)	M-178/10/3
			Add 5 per cent of cost of material for welding rods and other welding accessories				284.17	
			c) Overhead charges @ 0.055 on (a+b)				430.01	
			d) Contractor's profit @ 0.1 on (a+b+c)				824.83	
			Rate per quintal = a+b+c+d				9073.16	
						say	9073.00	
11.19		New	Tree Guard with MS Iron					
			Providing and fixing MS iron tree guard 60 cm dia and 2 metre high above ground level formed of 4 Nos (25 x 6 mm) and 8 Nos (25 x 3 mm) vertical MS riveted to 3 Nos (25 x 6 mm) iron rings in two halves, bolted together with 8 mm dia and 30 mm long bolts including painting two coats with paint of approved brand over a coat of priming, complete in all respects.					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	314.67	15.73	L-12
			Blacksmith	day	0.250	479.16	119.79	L-02
			Mazdoor	day	0.250	300.36	75.09	L-13
			b) Material					
			MS iron 25 x 6 mm	kg	19.200	55.000	1056.00	M-178 /1000
			MS iron 25 x 3 mm	kg	9.600	55.000	528.00	M-178 /1000
			Add 5 per cent of cost of material for riveting, bolting and welding accessories					
			c) Machinery					
			Tractor-trolley	hour	0.040	168.75	6.75	P&M-72
			d) Painting					
			Painting two coats including priming	sqm	1.770	55.00	97.35	Item 8.9
			e) Overhead charges @ 0.055 on (a+b+c)				99.07	
			f) Contractor's profit @ 0.1 on (a+b+c+e)				190.04	
			Rate per tree guard =a+b+c+d+e+f				2187.83	
						say	2188.00	
		Note	1 The items of excavation and concreting to be measured and paid separately as per design .					
			2 . Rate of painting may be adopted from the chapter as Traffic signs.					
11.20		New	Tree Guard with MS Angle Iron and Steel Wire					
			Providing and fixing tree guard 0.60 metre square, 2.00 metre high fabricated with MS angle iron 30 x 30 x 3 mm, MS iron 25 x 3 mm and steel wire 3 mm dia welded and fabricated as per design in two halves bolted together					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	314.67	15.73	L-12
			Blacksmith	day	0.250	479.16	119.79	L-02
			Welder	day	0.250	479.16	119.79	L-02
			Mazdoor	day	0.250	300.36	75.09	L-13
			b) Material					
			MS angle 30 x 30 x 3 mm	kg	13.500	55.00	742.50	M-178 /1000
			MS iron 25 x 3 mm	kg	18.000	55.00	990.00	M-178 /1000
			Steel wire 3 mm dia	kg	6.000	32.42	194.52	M-187

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 5 per cent of cost of material for riveting, bolting and welding accessories				96.35	
			c) Machinery					
			Tractor-trolley	hour	0.040	168.75	6.75	P&M-72
			d) Painting					
			Painting two coats including priming	sqm	1.500	55.00	82.50	Item 8.9
			e) Overhead charges @ 0.055 on (a+b+c)				129.83	
			f) Contractor's profit @ 0.1 on (a+b+c+e)				249.04	
			Rate per tree guard = a+b+c+d+e+f				2821.89	
						say	2822.00	
11.21		New	Compensatory Afforestation					
			Planting trees as compensatory afforestation at the rate of 290 trees per hectare at a spacing of 6 m by grubbing and leveling the ground upto a depth of 150 mm, digging holes 0.9 m dia, 1 m deep, mixing farm yard/sludge manure with soil, planting of sapling 2 m high with 25 cm dia stem, backfilling the hole and watering					
			Unit = Hectare					
			Taking output = one hectare					
			a) Labour					
			i) Planting					
			Mate	day	2.500	314.67	786.68	L-12
			Mazdoor	day	25.000	300.36	7509.00	L-13
			ii) For Maintenance for one year					
			Mate	day	5.000	314.67	1573.35	L-12
			Mazdoor	day	50.000	300.36	15018.00	L-13
			b) Machinery					
			Dozer 80 HP @ 1000 sqm/hour	hour	10.000	1500.00	15000.00	P&M-05
			Water tanker6 KL capacity (for planting)	hour	3.000	111.24	333.72	P&M-17
			Water tanker6 KL capacity (for maintenance)	hour	25.000	111.24	2781.00	P&M-17
			c) Material					
			Sapling 1 to 1.5 m high 2 cm dia stem	each	290.000	16.00	4640.00	M-164 x 0.8
			Add 10 per cent of sapling	each	29.000	16.00	464.00	M-164 x 0.8
			Decayed farm yard/sludge manure (planting)	cum	60.900	571.58	34809.22	M-073
			Decayed farm yard/sludge manure (maintenance)	cum	4.000	571.58	2286.32	M-073
			Pesticides for planting	kg	0.500	77.20	38.60	M-145
			Pesticides for maintenance	kg	1.500	77.20	115.80	M-145
			Cost of water	KL	18.000	0.00	0.00	M-1629
			d) Overhead charges @ 0.055 on (a+b+c)				4694.56	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				9005.02	
			Rate per hectare = a+b+c+d+e				99055.27	
						say	99055.00	
		Note	Cost of fencing to be provided as per size of plot and approved design, measured and paid separately					

CHAPTER-12
FOUNDATIONS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
12.1	304		Excavation for Structures				
			Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.				
		I	Ordinary soil				
			Unit = cum				
			Taking output = 10 cum				
		A	Manual Means				
		(i)	Depth upto 3 m				
		a)	Labour				
			Mate	day	0.14	314.67	44.05
			Mazdoor	day	3.50	300.36	1051.26
		b)	Overhead charges @ 0.055 on (a)				60.24
		c)	Contractor's profit @ 0.1 on (a+b)				115.56
			Cost for 10 cum = a+b+c				1271.11
			Rate per cum = (a+b+c)/10				127.11
						say	127.00
		Note	1. Cost of dewatering may be added where required upto, 10 percent of labour cost assessment for dewatering shall be made as per site conditions.				
			2. The excavated earth can be used partially for backfilling of foundation pit and partly for road work except for marshy soil. Hence cost of disposal has not been added except for marshy soil. This remark is common to all cases of item 12.1 excluding marshy soil.				
			3. The cost of shoring and shuttering, where needed, may be added @ 1 per cent on cost of excavation for open foundation.				
12.1 (I) A		(ii)	Depth 3 m to 6 m				
		a)	Labour				
			Mate/Supervisor	day	0.18	314.67	56.64
			Mazdoor	day	4.50	300.36	1351.62
		b)	Overhead charges @ 0.055 on (a)				77.45
		c)	Contractor's profit @ 0.1 on (a+b)				148.57
			Cost for 10 cum = a+b+c				1634.29
			Rate per cum = (a+b+c)/10				163.43
						say	163.00
		Note	Cost of dewatering may be added where required upto 15 per cent of labour cost. Assessment for dewatering shall be done as per actual ground conditions.				
12.1 (I) A		(iii)	Depth above 6 m				
		a)	Labour				
			Mate/Supervisor	day	0.24	314.67	75.52
			Mazdoor	day	6.00	300.36	1802.16
		b)	Overhead charges @ 0.055 on (a)				103.27
		c)	Contractor's profit @ 0.1 on (a+b)				198.10
			Cost for 10 cum = a+b+c				2179.05
			Rate per cum = (a+b+c)/10				217.90
						say	218.00
		Note	1. Cost of dewatering may be added where required upto 20 per cent of labour cost. Assessment for dewatering shall be made as per site conditions..				
12.1 (I)		B	Mechanical Means				
		(i)	Depth upto 3 m				
			Unit = cum				
			Taking output = 240 cum				
		a)	Labour				
			Mate	day	0.32	314.67	100.69
			Mazdoor	day	8.00	300.36	2402.88
		b)	Machinery				
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1000.00	6000.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			c) Overhead charges @ 0.055 on (a+b)				467.70
			d) Contractor's profit @ 0.1 on (a+b+c)				897.13
			Cost for 240 cum = a+b+c+d				9868.40
			Rate per cum = (a+b+c+d)/240				41.12
						say	<u>41.00</u>
		Note	Cost of dewatering upto 5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..				
12.1 (I) B		(ii)	Depth 3 m to 6 m				
			Unit = cum				
			Taking output = 210 cum				
		a) Labour					
		Mate	day	0.32	314.67	100.69	
		Mazdoor	day	8.00	300.36	2402.88	
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1000.00	6000.00	
		c) Overhead charges @ 0.055 on (a+b)					467.70
		d) Contractor's profit @ 0.1 on (a+b+c)					897.13
		Cost for 210 cum = a+b+c+d					9868.40
		Rate per cum = (a+b+c+d)/210					46.99
						say	<u>47.00</u>
		Note	Cost of dewatering upto 7.5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..				
12.1 (I) B		(iii)	Depth above 6m				
			Unit = cum				
			Taking output = 180 cum				
		a) Labour					
		Mate	day	0.40	314.67	125.87	
		Mazdoor	day	10.00	300.36	3003.60	
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1000.00	6000.00	
		c) Overhead charges @ 0.055 on (a+b)					502.12
		d) Contractor's profit @ 0.1 on (a+b+c)					963.16
		Cost for 180 cum = a+b+c+d					10594.75
		Rate per cum = (a+b+c+d)/180					58.86
						say	<u>59.00</u>
		Note	1. Cost of dewatering upto 10 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions.				
			2. Labour provided for excavation by mechanical means includes that required for trimming of bottom and side slopes.				
12.1		II	Ordinary Rock (not requiring blasting)				
		A	Manual Means				
		(i)	Depth upto 3 m				
			Unit = cum				
			Taking output = 10 cum				
		a) Labour					
		Mate	day	0.20	314.67	62.93	
		Mazdoor	day	5.00	300.36	1501.80	
		b) Overhead charges @ 0.055 on (a)					86.06
		c) Contractor's profit @ 0.1 on (a+b)					165.08
		Cost for 10 cum = a+b+c					1815.87
		Rate per cum = (a+b+c)/10					181.59
						say	<u>182.00</u>
		Note	Cost of dewatering upto 10 per cent of labour cost may be added, where required. Assessment for dewatering shall be made as per site conditions.				
12.1(II)		B	Mechanical Means				
			Unit = cum				
			Taking output = 180 cum				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			a) Labour				
			Mate	day	0.24	314.67	75.52
			Mazdoor	day	6.00	300.36	1802.16
			b) Machinery				
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1000.00	6000.00
			c) Overhead charges @ 0.055 on (a+b)				433.27
			d) Contractor's profit @ 0.1 on (a+b+c)				831.10
			Cost for 180 cum = a+b+c+d				9142.05
			Rate per cum = (a+b+c+d)/180				50.79
						say	51.00
		Note	1. Cost of dewatering upto 10 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.				
			2. In case of rock, foundation beyond 3 m is not dug and hence not included.				
12.1		III	Hard Rock (requiring blasting)				
		A	Manual Means				
			Unit = cum				
			Taking output = 10 cum				
			a) Labour				
			Mate	day	0.35	314.67	110.13
			Driller	day	0.50	314.67	157.34
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	8.00	300.36	2402.88
			b) Machinery				
			Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.00	293.76	293.76
			c) Material				
			Blasting Material	kg	3.50	120.72	422.52
			Detonator electric	each	14.00	5.75	80.44
			d) Overhead charges @ 0.055 on (a+b+c)				196.39
			e) Contractor's profit @ 0.1 on (a+b+c+d)				376.72
			Cost for 10 cum = a+b+c+d+e				4143.88
			Rate per cum = (a+b+c+d+e)/10				414.39
						say	414.00
		Note	Cost of dewatering @ 10 percent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions.				
12.1		IV	Hard Rock (blasting prohibited)				
			Unit = cum				
			Taking output = 10 cum				
		A	Mechanical Means				
			a) Labour				
			Mate	day	0.20	314.67	62.93
			Mazdoor	day	5.00	300.36	1501.80
			b) Machinery				
			Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.00	293.76	1762.56
			c) Overhead charges @ 0.055 on (a+b)				183.00
			d) Contractor's profit @ 0.1 on (a+b+c)				351.03
			Cost for 10 cum = a+b+c+d				3861.32
			Rate per cum = (a+b+c+d)/10				386.13
						say	386.00
		Note	1. Cost of dewatering upto 10 per cent of (a+b), may be added, where required. Assessment for dewatering shall be made as per site conditions.				
			2. In case of rock, foundation beyond 3 m is not dug and hence not included.				
12.1		V	Marshy Soil				
			Unit = cum				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Taking output = 10 cum				
			Depth upto 3 m				
		A	Manual means				
			a) Labour				
			Mate/Supervisor	day	0.40	314.67	125.87
			Mazdoor	day	10.00	300.36	3003.60
			b) Machinery				
			Tractor-trolley for removal.	hour	2.67	168.75	450.56
			c) Overhead charges @ 0.055 on (a+b)				196.90
			d) Contractor's profit @ 0.1 on (a+b+c)				377.69
			Cost for 10 cum = a+b+c+d				4154.63
			Rate per cum = (a+b+c+d)/ 10				415.46
						say	415.00
		Note	1. Cost of dewatering @ 30 per cent of (a), may be added, where required Assessment for dewatering shall be made as per site conditions.				
			2. Shoring & strutting 15 per cent of (a), where required may be added				
			3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item 12.1-IA (ii) to (iii) for ordinary soil				
12.1 (V)		B	Mechanical Means				
			a) Labour				
			Mate	day	0.08	314.67	25.17
			Mazdoor for dressing sides, bottom and backfilling	day	2.00	300.36	600.72
			b) Machinery				
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.17	1000.00	170.00
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.45	1010.00	454.50
			c) Overhead charges @ 0.055 on (a+b)				68.77
			d) Contractor's profit @ 0.1 on (a+b+c)				131.92
			Cost for 10 cum = a+b+c+d				1451.08
			Rate per cum = (a+b+c+d)/10				145.11
						say	145.00
		Note	1. Cost of dewatering @ 20 percent of (a+b) may be added, where required				
			2. Shoring & strutting @ 10 percent of (a+b), where required may be added				
			3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item 12.1-IB (ii) to (iii) for ordinary soil				
		VI	Back Filling in Marshy Foundation Pits				
			Unit : Cum				
			Taking Output : 6 cum				
			a) Labour				
			Mate	day	0.12	314.67	37.76
			Mazdoor for dressing sides, bottom and backfilling	day	3.00	300.36	901.08
			b) Machinery				
			Tractor-trolley for transportation	hour	2.00	168.75	337.50
			c) Overhead charges @ 0.055 on (a+b)				70.20
			d) Contractor's profit @ 0.1 on (a+b+c)				134.65
			Cost for 6 cum = a+b+c+d				1481.19
			Rate per cum = (a+b+c+d)/6				246.87
						say	247.00
12.2	304		Filling Annular Space Around Footing in Rock				
			Unit = cum				
			Taking out put = 1 cum				
			Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per item 12.4.				VALUE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
12.3	304		Sand Filling in Foundation Trenches as per Drawing & Technical Specification				
			Unit = cum				
			Taking output = 1 cum				
			a) Labour				
			Mate	day	0.01	314.67	3.15
			Mazdoor	day	0.30	300.36	90.11
			b) Material				
			Sand (assuming 20 per cent voids)	cum	1.20	252.20	302.64
			c) Overhead charges @ 0.055 on (a+b)				21.77
			d) Contractor's profit @ 0.1 on (a+b+c)				41.77
			Rate per cum = a+b+c+d				459.44
						say	459.00
12.4	2100		PCC 1:3:6 in Foundation				
			Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.				
			Unit = cum				
			Taking output = 15 cum				
			a) Labour				
			Mate	day	0.64	314.67	201.39
			Mason	day	1.00	479.16	479.16
			Mazdoor	day	15.00	300.36	4505.40
			b) Material				
			40 mm Aggregate	cum	13.50	999.65	13495.28
			coarse Sand	cum	6.75	252.20	1702.35
			cement	tonne	3.45	5000.00	17250.00
			Cost of water	KL	18.00	0.00	0.00
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Water tanker 6 KL capacity	hour	2.00	111.24	222.48
			d) Overhead charges @ 0.055 on (a+b+c)				2331.23
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4471.73
			Cost for 15 cum = a+b+c+d+e				49189.02
			Rate per cum = (a+b+c+d+e)/15				3279.27
						say	3279.00
		Note	Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.				
12.5	1300		Brick Masonry Work in Cement Mortar 1:3 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.				
			Unit = cum				
			Taking output = 5 cum				
			a) Material				
			Bricks 1st class	each	2500.00	7.00	17500.00
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.20	3098.00	3717.60
			b) Labour				
			Mate	day	0.48	314.67	151.04
			Mason	day	4.00	479.16	1916.64
			Mazdoor	day	8.00	300.36	2402.88
			c) Overhead charges @ 0.055 on (a+b)				1412.85
			d) Contractor's profit @ 0.1 on (a+b+c)				2710.10
			Cost for 5 cum = a+b+c+d				29811.11
			Rate per cum (a+b+c+d)/5				5962.22
						say	5962.00
		(i)	Rate for Brick Work in C. M. 1:2 in foundation				6179.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		(ii)	Rate for Brick Work in C. M. 1:3 in foundation				5962.00
		(iii)	Rate for Brick Work in C. M. 1:4 in foundation				5814.00
		(iv)	Rate for Brick Work in C. M. 1:6 in foundation				5673.00
12.6	Sub-analysis	(A)	Cement Mortar 1:3 (1 cement : 3 sand)				
			Unit = 1 cum				
			Taking output = 1 cum				
		a)	Materials				
			Cement	tonne	0.51	5000.00	2550.00
			Sand	cum	1.05	252.20	264.81
		b)	Labour				
			Mate	day	0.04	314.67	12.59
			Mazdoor	day	0.90	300.36	270.32
			Total Material and Labour = (a+b)			say	3098.00
	Sub-analysis (Addl.)	(B)	Cement Mortar 1:2 (1 cement : 2 sand)				
			Unit = 1 cum				
			Taking output = 1 cum				
		a)	Materials				
			Cement	tonne	0.672	5000.00	3360.00
			Sand	cum	0.933	252.20	235.39
		b)	Labour				
			Mate	day	0.04	314.67	12.59
			Mazdoor	day	0.90	300.36	270.32
			Total Material and Labour = (a+b)			say	3878.00
	Sub-analysis (Addl.)	(C)	Cement Mortar 1:4 (1 cement : 4 sand)				
			Unit = 1 cum				
			Taking output = 1 cum				
		a)	Materials				
			Cement	tonne	0.40	5000.00	2000.00
			Sand	cum	1.12	252.20	282.46
		b)	Labour				
			Mate	day	0.04	314.67	12.59
			Mazdoor	day	0.90	300.36	270.32
			Total Material and Labour = (a+b)			say	2565.00
	Sub-analysis (Addl.)	(D)	Cement Mortar 1:6 (1 cement : 6 sand)				
			Unit = 1 cum				
			Taking output = 1 cum				
		a)	Materials				
			Cement	tonne	0.288	5000.00	1440.00
			Sand	cum	1.337	252.20	337.23
		b)	Labour				
			Mate	day	0.04	314.67	12.59
			Mazdoor	day	0.90	300.36	270.32
			Total Material and Labour = (a+b)			say	2060.00
12.7	1400		Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications.				
			Unit = cum				
			Taking output = 5 cum				
	1405.4	(A)	Square Rubble Coursed Rubble Masonry (first sort)				
		a)	Material				
			Stone	cum	5.50	340.54	1872.97
			Through and bond stone	each	35.00	7.00	245.00
			(35no.x0.24mx0.24mx0.39m = 0.79 cu.m)				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.50	3098.00	4647.00
			b) Labour				
			Mate	day	0.66	314.67	207.68
			Mason	day	7.50	479.16	3593.70
			Mazdoor	day	9.00	300.36	2703.24
			c) Overhead charges @ 0.055 on (a+b)				729.83
			d) Contractor's profit @ 0.1 on (a+b+c)				1399.94
			Cost for 5 cum = a+b+c+d				15399.36
			Rate per cum (a+b+c+d)/5				3079.87
						say	3080.00
	1405.3	(B)	Random Rubble Masonry				
			(coursed/uncoursed)				
			Unit = cum				
			Taking output = 5 cum				
			a) Material				
			Stone	cum	5.50	340.55	1873.03
			Through and bond stone	each	35.00	7.00	245.00
			(35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)				
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.55	3098.00	4801.90
			b) Labour				
			Mate	day	0.62	314.67	195.10
			Mason	day	6.00	479.16	2874.96
			Mazdoor	day	9.00	300.36	2703.24
			c) Overhead charges @ 0.055 on (a+b)				698.13
			d) Contractor's profit @ 0.1 on (a+b+c)				1339.13
			Cost for 5 cum = a+b+c+d				14730.48
			Rate per cum (a+b+c+d)/5				2946.10
						say	2946.00
		Note	The labour already considered in cement mortar has been taken into account while proposing labour for masonry works.				
12.8	1500, 1700 & 2100		Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.				
		A	PCC Grade M15				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				
			Cement	tonne	4.13	5000.00	20650.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm Aggregate	cum	8.10	999.65	8097.17
			20 mm Aggregate	cum	4.05	1110.00	4495.50
			10 mm Aggregate	cum	1.35	899.36	1214.14
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 63 KVA	hour	6.00	361.80	2170.80
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3187.00		
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				1912.09
			e) Overhead charges @ 0.055 on (a+b+c+d)				2734.29
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				5244.87
			Cost for 15 cum = a+b+c+d+e+f				57693.61

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Rate per cum = (a+b+c+d+e+f)/15				3846.24
						<i>say</i>	3846.00
		Note	Needle Vibrator is an item of minor T & P which is already included in overhead charges. Hence not added in rate analysis of cement concrete works.				
12.8		B	PCC Grade M20				
			Unit : cum				
			Taking output = 15 cum				
		a)	Material				
			Cement	tonne	5.16	5000.00	25800.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm Aggregate	cum	5.40	999.65	5398.11
			20 mm Aggregate	cum	5.40	1110.00	5994.00
			10 mm Aggregate	cum	2.70	899.36	2428.27
		b)	Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
		c)	Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3524.00		
		d)	Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				2113.97
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3022.98
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				5798.62
			Cost for 15 cum = a+b+c+d+e+f				63784.86
			Rate per cum = (a+b+c+d+e+f)/15				4252.32
						<i>say</i>	4252.00
12.8		C	RCC Grade M20				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
		a)	Material				
			Cement	tonne	5.21	5000.00	26050.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
		b)	Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
		c)	Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3542.00		
		d)	Formwork @ 4 per cent on (a+b+c)				2125.06
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3038.83
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				5829.03
			Cost for 15 cum = a+b+c+d+e+f				64119.38
			Rate per cum = (a+b+c+d+e+f)/15				4274.63
						<i>say</i>	4275.00
12.8 C		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Unit : cum				
			Taking Output = 120 cum				
		a)	Material				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Cement	tonne	41.66	5000.00	208300.00
			Coarse Sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Lead beyond 1 km, L-lead in km	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3223.00		
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				15467.11
			e) Overhead charges @ 0.055 on (a+b+c+d)				22117.97
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				42426.29
			Cost for 120 cum = a+b+c+d+e+f				466689.22
			Rate per cum = (a+b+c+d+e+f)/120				3889.08
						say	3889.00
12.8		D	PCC Grade M25				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				
			Cement	tonne	5.99	5000.00	29950.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm Aggregate	cum	5.40	999.65	5398.11
			20 mm Aggregate	cum	5.40	1110.00	5994.00
			10 mm Aggregate	cum	2.70	899.36	2428.27
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3800.00		
			d) Formwork @ 3.75 per cent of (a+b+c)				2137.47
			e) Overhead charges @ 0.055 on (a+b+c+d)				3252.52
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6238.93
			Cost for 15 cum = a+b+c+d+e+f				68628.21
			Rate per cum = (a+b+c+d+e+f)/15				4575.21
						say	4575.00
12.8 D		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Unit : cum				
			Taking Output = 120 cum				
			a) Material				
			Cement	tonne	47.95	5000.00	239750.00
			Coarse sand	cum	54.00	252.20	13618.80
			40 mm Aggregate	cum	43.20	999.65	43184.88
			20 mm Aggregate	cum	43.20	1110.00	47952.00
			10 mm Aggregate	cum	21.60	899.36	19426.18

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3483.00		
			d) Formwork @ 3.75 per cent of cost of concrete i.e. cost of material, labour and machinery				15671.65
			e) Overhead charges @ 0.055 on (a+b+c+d)				23847.02
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				45742.92
			cost of 120 cum = a+b+c+d+e+f				503172.14
			Rate per cum = (a+b+c+d+e+f)/120				4193.10
						say	4193.00
12.8		E	RCC Grade M25				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				
			Cement	tonne	6.05	5000.00	30250.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3822.00		
			d) Formwork @ 3.75 per cent of a+b+c.				2149.74
			e) Overhead charges @ 0.055 on (a+b+c+d)				3271.19
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6274.74
			cost of 15 cum = a+b+c+d+e+f				69022.12
			Rate per cum (a+b+c+d+e+f)/15				4601.47
						say	4601.00
12.8 E		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Unit: cum				
			Taking Output = 120 cum				
			a) Material				
			Cement	tonne	48.38	5000.00	241900.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity 1 cum	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3503.00		
			d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				15760.42
			e) Overhead charges @ 0.055 on (a+b+c+d)				23982.10
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				46002.04
			cost of 120 cum = a+b+c+d+e+f				506022.41
			Rate per cum (a+b+c+d+e+f)/120				4216.85
						say	4217.00
12.8		F	PCC Grade M30				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				
			Cement	tonne	6.08	5000.00	30400.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm Aggregate	cum	5.40	999.65	5398.11
			20 mm Aggregate	cum	5.40	1110.00	5994.00
			10 mm Aggregate	cum	2.70	899.36	2428.27
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3830.00		
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				2010.73
			e) Overhead charges @ 0.055 on (a+b+c+d)				3270.30
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6273.03
			cost of 15 cum = a+b+c+d+e+f				69003.35
			Rate per cum (a+b+c+d+e+f)/15				4600.22
						say	4600.00
12.8 F		Case II	Using Batching Plant, Transit Mixer and Concrete Pump				
			Unit : cum				
			Taking Output = 120 cum				
			a) Material				
			Cement	tonne	48.60	5000.00	243000.00
			Coarse sand	cum	54.00	252.20	13618.80
			40 mm Aggregate	cum	43.20	999.65	43184.88
			20 mm Aggregate	cum	43.20	1110.00	47952.00
			10 mm Aggregate	cum	21.60	899.36	19426.18
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3510.00		
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				14740.62
			e) Overhead charges @ 0.055 on (a+b+c+d)				23974.56
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				45987.57
			cost of 120 cum = a+b+c+d+e+f				505863.31
			Rate per cum (a+b+c+d+e+f)/120				4215.53
						say	4216.00
12.8		G	RCC Grade M30				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				
			Cement	tonne	6.10	5000.00	30500.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3839.00		
			d) Formwork @ 3.5 per cent on cost of concrete i.e. cost of material, labour and machinery				2015.18
			e) Overhead charges @ 0.055 on (a+b+c+d)				3277.54
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6286.92
			cost of 15 cum = a+b+c+d+e+f				69156.08
			Rate per cum = (a+b+c+d+e+f)/15				4610.41
						say	4610.00
12.8 G		Case II	Using Batching Plant, Transit Mixer and Concrete Pump				
			Unit = cum				
			Taking output = 120 cum				
			a) Material				
			Cement	tonne	48.80	5000.00	244000.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3520.00		
			d) Formwork @ 3.5 per cent of cost of concrete i.e. cost of material, labour and machinery				14783.22
			e) Overhead charges @ 0.055 on (a+b+c+d)				24043.86
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				46120.49
			cost of 120 cum = a+b+c+d+e+f				507325.42
			Rate per cum (a+b+c+d+e+f)/120				4227.71
						say	4228.00
12.8		H	RCC Grade M35				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				
			Cement	tonne	6.33	5000.00	31650.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3916.00		
			d) Formwork @ 3 per cent on a+b+c				1761.79
			e) Overhead charges @ 0.055 on (a+b+c+d)				3326.85
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6381.51
			cost of 15 cum = a+b+c+d+e+f				70196.61
			Rate per cum = (a+b+c+d+e+f)/15				4679.77
						say	4680.00
12.8 H		Case II	Using Batching Plant, Transit Mixer and Concrete Pump				
			Unit ; cum				
			Taking Output = 120 cum				
			a) Material				
			Cement	tonne	50.64	5000.00	253200.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3597.00		
			d) Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				12947.34
			e) Overhead charges @ 0.055 on (a+b+c+d)				24448.88
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				46897.41

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			cost of 120 cum = a+b+c+d+e+f				515871.47
			Rate per cum = (a+b+c+d+e+f)/120				4298.93
						say	4299.00
		Note:	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.				
			WELL FOUNDATION				
12.9	1200		Providing and Constructing Temporary Island 16 m diameter for Construction of Well Foundation for 8m dia. Well.				
		A	Assuming depth of water 1.0 m and height of island to be 1.25 m including Royalty for earth @ Rs. 3768.00 for each Island.				
			Unit = 1 No				
			Taking output = 1 No.				
		a) Material					
			Earth (compacted)	cum	251.20	28.6	7179.30
			Sand bags	each	750.00	3.45	2587.50
		b) Labour					
			Mate	day	0.40	314.67	125.87
			Mazdoor for filling sand bags, stitching and placing	day	15.00	300.36	4505.40
		c) Machinery					
			Crane with grab 1 cum capacity	hour	20.00	784.62	15692.40
			Consumables @ 2.5 per cent of (c) above				392.31
		d) Overhead charges @ 0.055 on (a+b+c)					1676.55
		e) Contractor's profit @ 0.1 on (a+b+c+d)					3215.93
			Rate per No. (a+b+c+d+e)				35375.26
						say	35375.00
		Note	It is assumed that earth will be available within the working space of crane with grab bucket.				
12.9		B	Assuming depth of water 4.0 m and height of island 4.5 m including Royalty for earth @ Rs. 13565.00 for each Island.				
			Unit = 1No				
			Taking output = 1 No				
		a) Material					
			Earth (compacted)	cum	904.32	28.58	25845.47
			Sand bags	each	6000.00	3.45	20700.00
			Wooden ballies 8" Dia and 9 m long	each	95.00	40.00	3800.00
			Wooden ballies 2" Dia for bracing	metre	190.00	17.50	3325.00
		b) Labour					
			Mate	day	5.60	314.67	1762.15
			Mazdoor for piling 8" dia ballies for piling 8" dia ballies	day	18.00	300.36	5406.48
			Mazdoor for bracing with 2" dia ballies	day	12.00	300.36	3604.32
			Mazdoor for filling sand bags, stitching and placing	day	110.00	300.36	33039.60
		c) Machinery					
			Crane with grab 1 cum capacity	hour	50.00	784.62	39231.00
			Consumables and other arrangements for piling ballies @ 2.5 per cent of (a+b+c).				3417.85
		d) Overhead charges @ 0.055 on (a+b+c)					7707.25
		e) Contractor's profit @ 0.1 on (a+b+c+d)					14783.91
			Rate per No. (a+b+c+d+e)				162623.03
						say	162623.00
		Note	For other well diameters rate can be worked out on the basis of cross-sectional area of well. The diameter of the island shall be in the conformity with clause 1203.2 of MoRTH specifications.				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
12.9	C		Providing and constructing one span service road to reach island location from one pier location to another pier location including Royalty for earth @ Rs. 225.00 per m for service Road.				
			Assuming span length 30 m, width of service road 10m and depth of water 1m				
			Unit = 1 meter				
			Taking output = 30 metre				
		a)	Material				
			Earth	cum	450.00	28.58	12861.00
			Sand bags	each	300.00	3.45	1035.00
		b)	Labour				
			Mate	day	0.24	314.67	75.52
			Mazdoor for filling sand bags, stitching and placing	day	6.00	300.36	1802.16
		c)	Machinery				
			Front end Loader 1 cum capacity	hour	27.00	900.00	24300.00
			Tipper 5.5 cum capacity	hour	28.00	1010.00	28280.00
		d)	Overhead charges @ 0.055 on (a+b+c)				3759.45
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				7211.31
			Cost for 30 m (a+b+c+d+e)				79324.45
			Rate per m (a+b+c+d+e)/30				2644.15
						say	2644.00
12.10	1200 & 1900		Providing and Laying Cutting Edge of Mild Steel weighing 40 kg per metre for Well Foundation complete as per Drawing and Technical Specification.				
			Unit = 1 MT				
			Taking output = 1 MT				
		a)	Material				
			Structural steel in plates, angles, etc including 5 per cent wastage	tonne	1.05	55000.00	57750.00
			Nuts & bolts	Kg	20.00	48.00	960.00
		b)	Labour				
			(for cutting, bending, making holes, joining, welding and erecting in position)				
			Mate	day	1.32	314.67	415.36
			Fitter	day	5.50	414.80	2281.40
			Blacksmith	day	5.50	479.16	2635.38
			Welder	day	5.50	479.16	2635.38
			Mazdoor	day	16.50	300.36	4955.94
			Electrodes, cutting gas and other consumables @ 10 per cent of cost of (a) above				5871.00
		c)	Overhead charges @ 0.055 on (a+b)				4262.75
		d)	Contractor's profit @ 0.1 on (a+b+c)				8176.72
			Rate per MT (a+b+c+d)				89943.93
						say	89944.00
12.11	1200, 1500 & 1700		Plain/Reinforced Cement Concrete, in Well Foundation complete as per Drawing and Technical Specification.				
			Unit = 1 cum				
			Taking output = 1 cum				
		A	Well curb				
		(i)	RCC M20 Grade				
			Same as for 12.8 (C) except for formwork which shall be @ 20 per cent of the cost of concrete instead of 4 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3542.00
			d) formwork @ 20 per cent of the cost of concrete				708.40
			e) Overhead charges @ 0.055 on (a+b+c+d)				233.77

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				448.42
			Rate perm (a+b+c+d+e+f)				4932.59
						say	4933.00
12.11 A (i)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3222.00
			d) formwork @ 20 per cent of the cost of concrete				644.40
			e) Overhead charges @ 0.055 on (a+b+c+d)				212.65
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				407.91
			Rate perm (a+b+c+d+e+f)				4486.96
						say	4487.00
12.11 A		(ii)	RCC M25 Grade				
			Same as for 12.8 (E) except for formwork which shall be @ 20 per cent of the cost of concrete instead of 3.75 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3822.00
			d) formwork @ 20 per cent of the cost of concrete				764.40
			e) Overhead charges @ 0.055 on (a+b+c+d)				252.25
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				483.87
			Rate perm (a+b+c+d+e+f)				5322.52
						say	5323.00
12.11 A (ii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3503.00
			d) formwork @ 20 per cent of the cost of concrete				700.60
			e) Overhead charges @ 0.055 on (a+b+c+d)				231.20
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				443.48
			Rate perm (a+b+c+d+e+f)				4878.28
						say	4878.00
12.11 A		(iii)	RCC M35 Grade				
			Same as for 12.8 (H) except for formwork which shall be @ 20 per cent of the cost of concrete instead of 3.0 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3916.00
			d) formwork @ 20 per cent of the cost of concrete				783.20
			e) Overhead charges @ 0.055 on (a+b+c+d)				258.46
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				495.77
			Rate perm (a+b+c+d+e+f)				5453.42
						say	5453.00
12.11 A (iii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3658.00
			d) formwork @ 20 per cent of the cost of concrete				731.60
			e) Overhead charges @ 0.055 on (a+b+c+d)				241.43
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				463.10
			Rate perm (a+b+c+d+e+f)				5094.13
						say	5094.00
		Note.	If curb concrete is carried out within steel liner, cost of formwork shall be excluded.				
12.11		B	Well steining				
		(I)	PCC M15 Grade				
			Same as for 12.8 (A) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3187.00
			d) formwork @ 10 per cent of the cost of concrete				318.70
			e) Overhead charges @ 0.055 on (a+b+c+d)				192.81
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				369.85
			Rate perm (a+b+c+d+e+f)				4068.36
						say	4068.00
12.11 B		(ii)	PCC M20 Grade				
			Same as for 12.8 (B) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3524.00
			d) formwork @ 10 per cent of the cost of concrete				352.40
			e) Overhead charges @ 0.055 on (a+b+c+d)				213.20
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				408.96
			Rate perm (a+b+c+d+e+f)				4498.56
						say	4499.00
12.11 B		(iii)	RCC M20 Grade				
			Same as for 12.8 (C) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3542.00
			d) formwork @ 10 per cent of the cost of concrete				354.20
			e) Overhead charges @ 0.055 on (a+b+c+d)				214.29
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				411.05
			Rate perm (a+b+c+d+e+f)				4521.54
						say	4522.00
12.11 B (iii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3222.00
			d) formwork @ 10 per cent of the cost of concrete				322.20
			e) Overhead charges @ 0.055 on (a+b+c+d)				194.93
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				373.91
			Rate perm (a+b+c+d+e+f)				4113.04
						say	4113.00
12.11 B		(iv)	PCC M25 Grade				
			Same as for 12.8 (D) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3800.00
			d) formwork @ 10 per cent of the cost of concrete				380.00
			e) Overhead charges @ 0.055 on (a+b+c+d)				229.90
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				440.99
			Rate perm (a+b+c+d+e+f)				4850.89
						say	4851.00
12.11 B (iv)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3482.00
			d) formwork @ 10 per cent of the cost of concrete				348.20
			e) Overhead charges @ 0.055 on (a+b+c+d)				210.66
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				404.09
			Rate perm (a+b+c+d+e+f)				4444.95
						say	4445.00
12.11 B		(v)	RCC M25 Grade				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Same as for 12.8 (E) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3822.00
			d) formwork @ 10 per cent of the cost of concrete				382.20
			e) Overhead charges @ 0.055 on (a+b+c+d)				231.23
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				443.54
			Rate perm (a+b+c+d+e+f)				4878.97
						say	4879.00
12.11 B (v)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3503.00
			d) formwork @ 10 per cent of the cost of concrete				350.30
			e) Overhead charges @ 0.055 on (a+b+c+d)				211.93
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				406.52
			Rate perm (a+b+c+d+e+f)				4471.75
						say	4472.00
12.11 B		(vi)	PCC M30 Grade				
			Same as for 12.8 (F) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3830.00
			d) formwork @ 10 per cent of the cost of concrete				383.00
			e) Overhead charges @ 0.055 on (a+b+c+d)				231.72
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				444.47
			Rate perm (a+b+c+d+e+f)				4889.19
						say	4889.00
12.11 B (vi)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3509.00
			d) formwork @ 10 per cent of the cost of concrete				350.90
			e) Overhead charges @ 0.055 on (a+b+c+d)				212.29
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				407.22
			Rate perm (a+b+c+d+e+f)				4479.41
						say	4479.00
12.11 B		(vii)	RCC M30 Grade				
			Same as for 12.8 (G) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3839.00
			d) formwork @ 10 per cent of the cost of concrete				383.90
			e) Overhead charges @ 0.055 on (a+b+c+d)				232.26
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				445.52
			Rate perm (a+b+c+d+e+f)				4900.68
						say	4901.00
12.11 B (vii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3520.00
			d) formwork @ 10 per cent of the cost of concrete				352.00
			e) Overhead charges @ 0.055 on (a+b+c+d)				212.96
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				408.50
			Rate perm (a+b+c+d+e+f)				4493.46
						say	4493.00
12.11 B		(viii)	RCC M35 Grade				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Same as for 12.8 (H) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3 per cent.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3916.00
			d) formwork @ 10 per cent of the cost of concrete				391.60
			e) Overhead charges @ 0.055 on (a+b+c+d)				236.92
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				454.45
			Rate perm (a+b+c+d+e+f)				4998.97
						say	4999.00
12.11 B (viii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3658.00
			d) formwork @ 10 per cent of the cost of concrete				365.80
			e) Overhead charges @ 0.055 on (a+b+c+d)				221.31
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				424.51
			Rate perm (a+b+c+d+e+f)				4669.62
						say	4670.00
12.11 B		(ix)	RCC M40 Grade				
			Using Batching Plant, Transit Mixer and Concrete Pump				
			Unit = cum				
			Taking output = 120 cum				
			a) Material				
			Cement	tonne	51.60	5000.00	258000.00
			Coarse Sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			Admixture	kg	206.00	36.00	7416.00
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300xL	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3699.00		
			d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery				44379.38
			e) Overhead charges @ 0.055 on (a+b+c+d)				26849.53
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				51502.28
			cost of 120 cum = a+b+c+d+e+f				566525.03
			Rate per cum = (a+b+c+d+e+f)/120				4721.04
						say	4721.00
12.11 C		C	Bottom Plug				
			Concrete to be placed using tremie pipe				
			Note: 10% extra cement to be added where under water concreting is involved				
		(i)	PCC Grade M20				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Cement	tonne	5.55	5000.00	27750.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm Aggregate	cum	5.40	999.65	5398.11
			20 mm Aggregate	cum	5.40	1110.00	5994.00
			10 mm Aggregate	cum	2.70	899.36	2428.27
			Admixture	Kg	18.60	36.00	669.60
			b) Labour				
			Mate	day	0.90	314.67	283.20
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	540.10	3240.60
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3915.00		
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2547.57
			d) Overhead charges @ 0.055 on (a+b+c)				3369.83
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6463.95
			cost of 15 cum = a+b+c+d+e				71103.43
			Rate per cum = (a+b+c+d+e)/15				4740.23
						say	4740.00
12.11 C (i)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			Unit ; cum				
			Taking Output = 120 cum				
			a) Material				
			Cement	tonne	44.40	5000.00	222000.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			Admixture	Kg	148.80	36.00	5356.80
			b) Labour				
			Mate	day	0.88	314.67	276.91
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3382.00		
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				17943.84
			d) Overhead charges @ 0.055 on (a+b+c)				23303.01
			e) Contractor's profit @ 0.1 on (a+b+c+d)				44699.41
			cost of 120 cum = a+b+c+d+e				491693.49
			Rate per cum = (a+b+c+d+e)/120				4097.45
						say	4097.00
12.11 C		(ii)	PCC Grade M25				
		Case I	Using Concrete Mixer				
			Unit = cum				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			<i>Taking output = 15 cum</i>				
			a) Material				
			Cement	tonne	5.99	5000.00	29950.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm Aggregate	cum	5.40	999.65	5398.11
			20 mm Aggregate	cum	5.40	1110.00	5994.00
			10 mm Aggregate	cum	2.70	899.36	2428.27
			Admixture	Kg	21.60	36.00	777.60
			b) Labour				
			Mate	day	0.90	314.67	283.20
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	540.10	3240.60
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4069.00		
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2662.97
			d) Overhead charges @ 0.055 on (a+b+c)				3503.12
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6719.62
			cost of 15 cum = a+b+c+d+e				73915.78
			Rate per cum = (a+b+c+d+e)/15				4927.72
						<i>say</i>	4928.00
12.11 C (ii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			<i>Unit = cum</i>				
			<i>Taking output = 120 cum</i>				
			a) Material				
			Cement	tonne	47.88	5000.00	239400.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			Admixture	Kg	172.80	36.00	6220.80
			b) Labour				
			Mate	day	0.88	314.67	276.91
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3534.00		
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				18857.04
			d) Overhead charges @ 0.055 on (a+b+c)				24357.75
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46722.60
			cost of 120 cum = a+b+c+d+e				513948.63
			Rate per cum = (a+b+c+d+e)/120				4282.91
						<i>say</i>	4283.00
12.11 C		(iii)	PCC Grade M30				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		Case I	Using Concrete Mixer				
			<i>Unit = 1 cum</i>				
			<i>Taking output = 15 cum</i>				
		a)	Material				
			Cement	tonne	6.08	5000.00	30400.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm Aggregate	cum	5.40	999.65	5398.11
			20 mm Aggregate	cum	5.40	1110.00	5994.00
			10 mm Aggregate	cum	2.70	899.36	2428.27
			Admixture	Kg	21.60	36.00	777.60
		b)	Labour				
			Mate	day	0.90	314.67	283.20
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
		c)	Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	540.10	3240.60
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4099.00		
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2685.47
		d)	Overhead charges @ 0.055 on (a+b+c)				3529.11
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				6769.47
			cost of 15 cum = a+b+c+d+e				74464.12
			Rate per cum = (a+b+c+d+e)/15				4964.27
						say	4964.00
12.11 C (iii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			<i>Unit = cum</i>				
			<i>Taking output = 120 cum</i>				
		a)	Material				
			Cement	tonne	48.64	5000.00	243200.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			Admixture	Kg	172.80	36.00	6220.80
		b)	Labour				
			Mate	day	0.88	314.67	276.91
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
		c)	Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3566.00		
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				19047.04
		d)	Overhead charges @ 0.055 on (a+b+c)				24577.20
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				47143.55
			cost of 120 cum = a+b+c+d+e				518579.03
			Rate per cum = (a+b+c+d+e)/120				4321.49

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
						<i>say</i>	4321.00
12.11 C		(iv)	PCC Grade M35				
		Case I	Using Concrete Mixer				
			<i>Unit = 1 cum</i>				
			<i>Taking output = 15 cum</i>				
		a)	Material				
			Cement	tonne	6.29	5000.00	31450.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm Aggregate	cum	5.40	999.65	5398.11
			20 mm Aggregate	cum	5.40	1110.00	5994.00
			10 mm Aggregate	cum	2.70	899.36	2428.27
			Admixture	Kg	21.60	36.00	777.60
		b)	Labour				
			Mate	day	0.90	314.67	283.20
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
		c)	Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	540.10	3240.60
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4169.00		
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2737.97
		d)	Overhead charges @ 0.055 on (a+b+c)				3589.74
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				6885.78
			cost of 15 cum = a+b+c+d+e				75743.57
			Rate per cum = (a+b+c+d+e)/15				5049.57
						<i>say</i>	5050.00
12.11 C (iv)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			<i>Unit = cum</i>				
			<i>Taking output = 120 cum</i>				
		a)	Material				
			Cement	tonne	50.28	5000.00	251400.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			Admixture	Kg	172.80	36.00	6220.80
		b)	Labour				
			Mate	day	0.88	314.67	276.91
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
		c)	Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3634.00		
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				19457.04
		d)	Overhead charges @ 0.055 on (a+b+c)				25050.75
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				48051.90

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			cost of 120 cum = a+b+c+d+e				528570.93
			Rate per cum = (a+b+c+d+e)/120				4404.76
						say	4405.00
12.11		D	Intermediate plug				
		(i)	Grade M20 PCC				
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3915.00
			d) Overhead charges @ 0.055 on (a+b+c)				215.33
			e) Contractor's profit @ 0.1 on (a+b+c+d)				413.03
			Rate per cum = (a+b+c+d+e)				4543.36
						say	4543.00
12.11 D (i)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3382.00
			d) Overhead charges @ 0.055 on (a+b+c)				186.01
			e) Contractor's profit @ 0.1 on (a+b+c+d)				356.80
			Rate per cum = (a+b+c+d+e)				3924.81
						say	3925.00
12.11 D		(ii)	Grade M25 PCC				
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4069.00
			d) Overhead charges @ 0.055 on (a+b+c)				223.80
			e) Contractor's profit @ 0.1 on (a+b+c+d)				429.28
			Rate per cum = (a+b+c+d+e)				4722.07
						say	4722.00
12.11 D (ii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3534.00
			d) Overhead charges @ 0.055 on (a+b+c)				194.37
			e) Contractor's profit @ 0.1 on (a+b+c+d)				372.84
			Rate per cum = (a+b+c+d+e)				4101.21
						say	4101.00
12.11 D		(iii)	Grade M30 PCC				
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4099.00
			d) Overhead charges @ 0.055 on (a+b+c)				225.45
			e) Contractor's profit @ 0.1 on (a+b+c+d)				432.44
			Rate per cum = (a+b+c+d+e)				4756.89
						say	4757.00
12.11 D (iii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3566.00
			d) Overhead charges @ 0.055 on (a+b+c)				196.13
			e) Contractor's profit @ 0.1 on (a+b+c+d)				376.21
			Rate per cum = (a+b+c+d+e)				4138.34
						say	4138.00
12.11		E	Top plug				
		(i)	Grade M15 PCC				
			Same as Item 12.8(a) excluding formwork				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3187.00
			d) Overhead charges @ 0.055 on (a+b+c)				175.29
			e) Contractor's profit @ 0.1 on (a+b+c+d)				336.23
			Rate per cum = (a+b+c+d+e)				3698.51
						say	3699.00
			Same as Item 12.8(b) excluding formwork				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3524.00
			d) Overhead charges @ 0.055 on (a+b+c)				193.82
			e) Contractor's profit @ 0.1 on (a+b+c+d)				371.78
			Rate per cum = (a+b+c+d+e)				4089.60
						say	4090.00
			Same as Item 12.8 (d) excluding formwork				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3800.00
			d) Overhead charges @ 0.055 on (a+b+c)				209.00
			e) Contractor's profit @ 0.1 on (a+b+c+d)				400.90
			Rate per cum = (a+b+c+d+e)				4409.90
						say	4410.00
12.11 E (iii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3482.00
			d) Overhead charges @ 0.055 on (a+b+c)				191.51
			e) Contractor's profit @ 0.1 on (a+b+c+d)				367.35
			Rate per cum = (a+b+c+d+e)				4040.86
						say	4041.00
12.11 E		(iv)	Grade M30 PCC				
			Same as Item 12.8(f) excluding formwork				
		Case I	Using Concrete Mixer				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3830.00
			d) Overhead charges @ 0.055 on (a+b+c)				210.65
			e) Contractor's profit @ 0.1 on (a+b+c+d)				404.07
			Rate per cum = (a+b+c+d+e)				4444.72
						say	4445.00
12.11 E (iv)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump				
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3509.00
			d) Overhead charges @ 0.055 on (a+b+c)				193.00
			e) Contractor's profit @ 0.1 on (a+b+c+d)				370.20
			Rate per cum = (a+b+c+d+e)				4072.19
						say	4072.00
12.11		F	Well cap				
		(i)	RCC Grade M20				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
		a)	Material				
			Cement	tonne	5.12	5000.00	25600.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
		b)	Labour				
			Mate	day	0.86	314.67	270.62

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Form Work @ 4 per cent of a+b+c				2107.06
			d) Overhead charges @ 0.055 on (a+b+c)				3013.09
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5779.66
			cost of 15 cum = a+b+c+d+e				63576.26
			Rate per cum = (a+b+c+d+e)/15				4238.42
						<i>say</i>	4238.00
12.11 F (i)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump				
			Unit = cum				
			Taking output = 120 cum				
			a) Material				
			Cement	tonne	40.92	5000.00	204600.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader (capacity 1 cum)	hour	6.00	900.00	5400.00
			Transit Mixer (capacity 4.0 cu.m)				
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Formwork @ 4 per cent of (a+b+c)				15319.11
			d) Overhead charges @ 0.055 on (a+b+c)				21906.33
			e) Contractor's profit @ 0.1 on (a+b+c+d)				42020.33
			cost of 120 cum = a+b+c+d+e				462223.62
			Rate per cum = (a+b+c+d+e)/120				3851.86
						<i>say</i>	3852.00
12.11 F		(ii)	RCC Grade M25				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				
			Cement	tonne	6.05	5000.00	30250.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Form Work @ 3.75 per cent of a+b+c				2149.74
			d) Overhead charges @ 0.055 on (a+b+c)				3271.19
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6274.74
			cost of 15 cum = a+b+c+d+e				69022.12

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Rate per cum = (a+b+c+d+e)/15				4601.47
						<i>say</i>	4601.00
12.11 F (ii)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump				
			<i>Unit = cum</i>				
			<i>Taking output = 120 cum</i>				
			a) Material				
			Cement	tonne	48.40	5000.00	242000.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader (capacity 1 cum)	hour	6.00	900.00	5400.00
			Transit Mixer (capacity 4.0 cu.m)				
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Formwork @ 3.75 per cent of (a+b+c)				15764.17
			d) Overhead charges @ 0.055 on (a+b+c)				23987.81
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46012.98
			cost of 120 cum = a+b+c+d+e				506142.81
			Rate per cum = (a+b+c+d+e)/120				4217.86
						<i>say</i>	4218.00
12.11 F		(iii)	RCC Grade M30				
		Case I	Using Concrete Mixer				
			<i>Unit = cum</i>				
			<i>Taking output = 15 cum</i>				
			a) Material				
			Cement	tonne	6.10	5000.00	30500.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Formwork @ 3.5 per cent of (a+b+c)				2015.18
			d) Overhead charges @ 0.055 on (a+b+c)				3277.54
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6286.92
			cost of 15 cum = a+b+c+d+e				69156.08
			Rate per cum = (a+b+c+d+e)/15				4610.41
						<i>say</i>	4610.00
12.11 F (iii)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump				
			<i>Unit = cum</i>				
			<i>Taking output = 120 cum</i>				
			a) Material				
			Cement	tonne	48.79	5000.00	243950.00
			Coarse sand	cum	54.00	252.20	13618.80

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader (capacity 1 cum)	hour	6.00	900.00	5400.00
			Transit Mixer (capacity 4.0 cu.m)				
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Formwork @ 3.5 per cent of (a+b+c)				14781.47
			d) Overhead charges @ 0.055 on (a+b+c)				24041.01
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46115.03
			cost of 120 cum = a+b+c+d+e				507265.37
			Rate per cum = (a+b+c+d+e)/120				4227.21
						say	4227.00
12.11 F		(iv)	RCC Grade M35				
		Case I	Using Concrete Mixer				
			Unit = cum				
			Taking output = 15 cum				
			a) Material				
			Cement	tonne	6.33	5000.00	31650.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	479.16	718.74
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			Formwork @ 3 per cent of (a+b+c)				1761.79
			d) Overhead charges @ 0.055 on (a+b+c)				3326.85
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6381.51
			cost of 15 cum = a+b+c+d+e				70196.61
			Rate per cum = (a+b+c+d+e)/15				4679.77
						say	4680.00
12.11 F (iv)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump				
			Unit = cum				
			Taking output = 120 cum				
			a) Material				
			Cement	tonne	50.64	5000.00	253200.00
			Coarse sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			b) Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Loader (capacity 1 cum)	hour	6.00	900.00	5400.00
			Transit Mixer (capacity 4.0 cu.m)				
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Formwork @ 3 per cent of (a+b+c)				12947.34
			d) Overhead charges @ 0.055 on (a+b+c)				24448.88
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46897.41
			cost of 120 cum = a+b+c+d+e				515871.47
			Rate per cum = (a+b+c+d+e)/120				4298.93
						say	4299.00
		Note	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.				
'12.11 F		(v)	RCC M40 Grade				
			Using Batching Plant, Transit Mixer and Concrete Pump				
			Unit = cum				
			Taking output = 120 cum				
		a)	Material				
			Cement	tonne	52.20	5000.00	261000.00
			Coarse Sand	cum	54.00	252.20	13618.80
			20 mm Aggregate	cum	64.80	1110.00	71928.00
			10 mm Aggregate	cum	43.20	899.36	38852.35
			Admixture	kg	206.00	36.00	7416.00
		b)	Labour				
			Mate	day	0.84	314.67	264.32
			Mason	day	3.00	479.16	1437.48
			Mazdoor	day	18.00	300.36	5406.48
		c)	Machinery				
			Batching Plant	hour	6.00	2400.00	14400.00
			Generator 100 KVA	hour	6.00	1925.00	11550.00
			Loader 1 cum capacity	hour	6.00	900.00	5400.00
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300.L	4.32	1296.00
			Concrete Pump	hour	6.00	234.36	1406.16
			Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				13403.82
			d) Overhead charges @ 0.055 on (a+b+c)				25310.87
			e) Contractor's profit @ 0.1 on (a+b+c+d)				48550.85
			cost of 120 cum = a+b+c+d+e				534059.38
			Rate per cum = (a+b+c+d+e)/120				4450.49
						say	4450.00
12.12	Section 1200		Sinking of 6 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.				
			Unit = Running Meter.				
			Taking output = 1 m				
			Diameter of well - 6 m.				
		A	Sandy Soil				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking = 0.50 m per hour.				
		a)	Labour				
			Mate	day	0.12	314.67	37.76
			Sinker (skilled)	day	1.00	414.80	414.80

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Sinking helper (semi-skilled)	day	2.00	314.67	629.34
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	2.00	1176.12	2352.24
			Consumables in sinking @10 per cent of (b)				235.22
			c) Overhead charges @ 0.055 on (a+b)				201.82
			d) Contractor's profit @ 0.1 on (a+b+c)				387.12
			Rate per metre = (a+b+c+d)				4258.30
						say	4258.00
12.12 A		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking = 0.33 m per hour.				
			a) Labour				
			Mate	day	0.15	314.67	47.20
			Sinker	day	1.25	414.80	518.50
			Sinking helper (semi-skilled)	day	2.50	314.67	786.68
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	1176.12	3528.36
			Consumables in sinking @10 per cent of (b)				352.84
			c) Overhead charges @ 0.055 on (a+b)				287.85
			d) Contractor's profit @ 0.1 on (a+b+c)				552.14
			Rate per metre = (a+b+c+d)				6073.56
						say	6074.00
12.12 A		(iii)	Beyond 10m upto 20m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
			11th m	5%	6378.00		
			12th m	5%	6697.00		
			13th m	5%	7032.00		
			14th m	5%	7384.00		
			15th m	5%	7753.00		
			16th m	5%	8141.00		
			17th m	5%	8548.00		
			18th m	5%	8975.00		
			19th m	5%	9424.00		
			20th m	5%	9895.00		
			Total Cost from 10m upto 20m		80227.00		
			Avg Rate per metre		8023.00		
12.12 A		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge	
			21st m	7.5%	10637.00	12764.00	
			22nd m	7.5%	11435.00	13722.00	
			23rd m	7.5%	12293.00	14752.00	
			24th m	7.5%	13215.00	15858.00	
			25th m	7.5%	14206.00	17047.00	
			26th m	7.5%	15271.00	18325.00	
			27th m	7.5%	16416.00	19699.00	
			28th m	7.5%	17647.00	21176.00	
			29th m	7.5%	18971.00	22765.00	
			30th m	7.5%	20394.00	24473.00	
			Total Cost from 20m upto 30m		150485.00	180581.00	
			Avg Rate per metre		15049.00	18058.00	
12.12 A		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			31st m	10%	22433.00	26920.00	
			32nd	10%	24676.00	29611.00	
			33rd m	10%	27144.00	32573.00	
			34th m	10%	29858.00	35830.00	
			35th m	10%	32844.00	39413.00	
			36th m	10%	36128.00	43354.00	
			37th m	10%	39741.00	47689.00	
			38th m	10%	43715.00	52458.00	
			39th m	10%	48087.00	57704.00	
			40th m	10%	52896.00	63475.00	
			Total Cost from 30m upto 40m		357522.00	429027.00	
			Avg Rate per metre		35752.00	42903.00	
12.12		B	Clayey Soil (6m dia. Well)				
			Unit = Running Meter.				
			Taking output = 1 meter				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking = 0.33 m per hour.				
		a)	Labour				
			Mate	day	0.15	314.67	47.20
			Sinker (skilled)	day	1.50	414.80	622.20
			Sinking helper (semi-skilled)	day	2.25	314.67	708.01
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	1176.12	3528.36
			Consumables in sinking @ 10 per cent of (b)				352.84
		c)	Overhead charges @ 0.055 on (a+b)				289.22
		d)	Contractor's profit @ 0.1 on (a+b+c)				554.78
			Rate per metre = (a+b+c+d)				6102.61
						say	6103.00
12.12 B		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking = 0.17 m per hour.				
		a)	Labour				
			Mate	day	0.30	314.67	94.40
			Sinker	day	3.00	414.80	1244.40
			Sinking helper (semi-skilled)	day	4.50	314.67	1416.02
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	2.00	513.00	1026.00
			Consumables in sinking @ 10 per cent of (b)				808.27
		c)	Overhead charges @ 0.055 on (a+b)				640.52
		d)	Contractor's profit @ 0.1 on (a+b+c)				1228.63
			Rate per metre = (a+b+c+d)				13514.96
						say	13515.00
12.12 B		(iii)	Beyond 10 m upto 20 m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if required	
			11th m	5%	14191.00	14901.00	
			12th m	5%	14901.00	15646.00	
			13th m	5%	15646.00	16428.00	
			14th m	5%	16428.00	17249.00	
			15th m	5%	17249.00	18111.00	
			16th m	5%	18111.00	19017.00	
			17th m	5%	19017.00	19968.00	
			18th m	5%	19968.00	20966.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			19th m	5%	20966.00	22014.00	
			20th m	5%	22014.00	23115.00	
			Total Cost from 10m upto 20m		178491.00	187415.00	
			Avg Rate per metre		17849.00	18742.00	
12.12 B		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering of the cost, if required				
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b) Including 5% for dewatering, if required
			21st m	7.5%	23665.00	29581.00	31060.00
			22nd m	7.5%	25440.00	31800.00	33390.00
			23rd m	7.5%	27348.00	34185.00	35894.00
			24th m	7.5%	29399.00	36749.00	38586.00
			25th m	7.5%	31604.00	39505.00	41480.00
			26th m	7.5%	33974.00	42468.00	44591.00
			27th m	7.5%	36522.00	45653.00	47936.00
			28th m	7.5%	39261.00	49076.00	51530.00
			29th m	7.5%	42206.00	52758.00	55396.00
			30th m	7.5%	45371.00	56714.00	59550.00
			Total Cost from 20m upto 30m		334790.00	418489.00	439413.00
			Avg Rate per metre		33479.00	41849.00	43941.00
12.12 B		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering, if required				
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(b) Including 20% for Kentledge	(b)Including 5% for dewatering, if required
			31st m	10%	49908.00	59890.00	62885.00
			32nd	10%	54899.00	65879.00	69173.00
			33rd m	10%	60389.00	72467.00	76090.00
			34th m	10%	66428.00	79714.00	83700.00
			35th m	10%	73071.00	87685.00	92069.00
			36th m	10%	80378.00	96454.00	101277.00
			37th m	10%	88416.00	106099.00	111404.00
			38th m	10%	97258.00	116710.00	122546.00
			39th m	10%	106984.00	128381.00	134800.00
			40th m	10%	117682.00	141218.00	148279.00
			Total Cost from 30m upto 40m		795413.00	954497.00	1002223.00
			Avg Rate per metre		79541.00	95450.00	100222.00
12.12		C	Soft Rock (6m dia well)				
			Unit = Running Meter.				
			Taking output = 1 m				
			Depth in Soft rock strata up to 3m				
			Rate of sinking = 0.25 m per hour.				
		a)	Labour				
			Mate	day	0.92	314.67	289.50
			Sinker (skilled)	day	3.00	414.80	1244.40
			Sinking helper (semi-skilled)	day	20.00	314.67	6293.40
			Diver	day	0.50	414.80	207.40
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1176.12	4704.48
			Air compressor with pneumatic breakers	hour	3.50	513.00	1795.50
			Consumables in sinking @ 10 per cent of (b)				650.00
			Add for dewatering @ of 5 per cent of (a+b), if required				759.23
		c)	Overhead charges @ 0.055 on (a+b)				876.91

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			d) Contractor's profit @ 0.1 on (a+b+c)				1682.08
			Rate per metre = (a+b+c+d)				18502.91
						say	18503.00
12.12		D	Hard Rock (6m dia well)				
			Unit = Running Meter				
			Taking output = 1 m				
			Depth in hard rock strata upto 3 m				
			Rate of sinking = 0.17 m per hour.				
			a) Material				
			Gelatine 80 per cent	Kg	4.00	120.72	482.88
			Electric Detonators	each	18.00	5.75	103.42
			b) Labour				
			Mate	day	1.56	314.67	490.89
			Driller	day	2.00	314.67	629.34
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	12.00	300.36	3604.32
			Mazdoor (Skilled)	day	4.00	414.80	1659.20
			c) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	513.00	1026.00
			Dewatering @ 5 per cent of cost of (b+c), if required.				728.51
			Consumables in sinking @ 10 per cent of cost of (b).				808.27
			d) Overhead charges @ 0.055 on (a+b+c)				918.13
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1761.14
			Rate per metre = (a+b+c+d+e)				19372.52
						say	19373.00
12.13	Section 1200		Sinking of 7 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.				
			Unit = Running Meter.				
			Taking output = 1 m				
			Diameter of well - 7 m.				
		A	Sandy Soil				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking = 0.30 m per hour.				
			a) Labour				
			Mate	day	0.15	314.67	47.20
			Sinker (skilled)	day	1.25	414.80	518.50
			Sinking helper (semi-skilled)	day	2.50	314.67	786.68
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	3.25	1176.12	3822.39
			Consumables in sinking @10 per cent of (b)				382.24
			c) Overhead charges @ 0.055 on (a+b)				305.64
			d) Contractor's profit @ 0.1 on (a+b+c)				586.26
			Rate per metre = (a+b+c+d)				6448.90
						say	6449.00
12.13 A		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking = 0.22 m per hour.				
			a) Labour				
			Mate	day	0.18	314.67	56.64
			Sinker	day	1.50	414.80	622.20
			Sinking helper (semi-skilled)	day	3.00	314.67	944.01

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1176.12	5292.54
			Consumables in sinking @10 per cent of (b)				529.25
			c) Overhead charges @ 0.055 on (a+b)				409.46
			d) Contractor's profit @ 0.1 on (a+b+c)				785.41
			Rate per metre = (a+b+c+d)				8639.51
						say	8640.00
12.13 A		(iii)	Beyond 10m upto 20m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
			11th m	5%	9071.00		
			12th m	5%	9525.00		
			13th m	5%	10001.00		
			14th m	5%	10501.00		
			15th m	5%	11026.00		
			16th m	5%	11577.00		
			17th m	5%	12156.00		
			18th m	5%	12764.00		
			19th m	5%	13402.00		
			20th m	5%	14072.00		
			Total Cost from 10m upto 20m		114095.00		
			Avg Rate per metre		11410.00		
12.13 A		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).			(a) (b)Including 20% for Kentledge	
			21st m	7.5%	15127.00	18152.00	
			22nd m	7.5%	16262.00	19514.00	
			23rd m	7.5%	17482.00	20978.00	
			24th m	7.5%	18793.00	22552.00	
			25th m	7.5%	20202.00	24242.00	
			26th m	7.5%	21717.00	26060.00	
			27th m	7.5%	23346.00	28015.00	
			28th m	7.5%	25097.00	30116.00	
			29th m	7.5%	26979.00	32375.00	
			30th m	7.5%	29002.00	34802.00	
			Total Cost from 20m upto 30m		214007.00	256806.00	
			Avg Rate per metre		21401.00	25681.00	
12.13 A		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.			(a) (b)Including 20% for Kentledge	
			31st m	10%	31902.00	38282.00	
			32nd	10%	35092.00	42110.00	
			33rd m	10%	38601.00	46321.00	
			34th m	10%	42461.00	50953.00	
			35th m	10%	46707.00	56048.00	
			36th m	10%	51378.00	61654.00	
			37th m	10%	56516.00	67819.00	
			38th m	10%	62168.00	74602.00	
			39th m	10%	68385.00	82062.00	
			40th m	10%	75224.00	90269.00	
			Total Cost from 30m upto 40m		508434.00	610120.00	
			Avg Rate per metre		50843.00	61012.00	
12.13		B	Clayey Soil (7m dia. Well)				
			Unit = Running Meter.				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			<i>Taking output = 1 cum</i>				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking = 0.22 m per hour.				
		a)	Labour				
			Mate	day	0.18	314.67	56.64
			Sinker (skilled)	day	1.50	414.80	622.20
			Sinking helper (semi-skilled)	day	3.00	314.67	944.01
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1176.12	5292.54
			Consumables in sinking @ 10 per cent of (b)				529.25
		d)	Overhead charges @ 0.055 on (a+b)				409.46
		e)	Contractor's profit @ 0.1 on (a+b+c)				785.41
			Rate per metre = (a+b+c+d)				8639.51
						<i>say</i>	<i>8640.00</i>
12.13 B		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking = 0.17 m per hour.				
		a)	Labour				
			Mate	day	0.26	314.67	81.81
			Sinker	day	2.00	414.80	829.60
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.25	513.00	1667.25
			Consumables in sinking @ 10 per cent of (b)				872.40
		c)	Overhead charges @ 0.055 on (a+b)				647.16
		d)	Contractor's profit @ 0.1 on (a+b+c)				1241.36
			Rate per metre = (a+b+c+d)				13654.98
						<i>say</i>	<i>13655.00</i>
12.13 B		(iii)	Beyond 10 m upto 20 m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if required	
			11th m	5%	14338.00	15055.00	
			12th m	5%	15055.00	15808.00	
			13th m	5%	15808.00	16598.00	
			14th m	5%	16598.00	17428.00	
			15th m	5%	17428.00	18299.00	
			16th m	5%	18299.00	19214.00	
			17th m	5%	19214.00	20175.00	
			18th m	5%	20175.00	21184.00	
			19th m	5%	21184.00	22243.00	
			20th m	5%	22243.00	23355.00	
			Total Cost from 10m upto 20m		180342.00	189359.00	
			<i>Avg Rate per metre</i>		<i>18034.00</i>	<i>18936.00</i>	
12.13 B		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering on the cost, if required				
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	7.5%	23911.00	29889.00	31383.00
			32nd	7.5%	25704.00	32130.00	33737.00
			33rd m	7.5%	27632.00	34540.00	36267.00
			34th m	7.5%	29704.00	37130.00	38987.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			35th m	7.5%	31932.00	39915.00	41911.00
			36th m	7.5%	34327.00	42909.00	45054.00
			37th m	7.5%	36902.00	46128.00	48434.00
			38th m	7.5%	39670.00	49588.00	52067.00
			39th m	7.5%	42645.00	53306.00	55971.00
			40th m	7.5%	45843.00	57304.00	60169.00
			Total Cost from 30m upto 40m		338270.00	422839.00	443980.00
			Avg Rate per metre		33827.00	42284.00	44398.00
12.13 B		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering, if required				
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	10%	50427.00	60512.00	63538.00
			32nd	10%	55470.00	66564.00	69892.00
			33rd m	10%	61017.00	73220.00	76881.00
			34th m	10%	67119.00	80543.00	84570.00
			35th m	10%	73831.00	88597.00	93027.00
			36th m	10%	81214.00	97457.00	102330.00
			37th m	10%	89335.00	107202.00	112562.00
			38th m	10%	98269.00	117923.00	123819.00
			39th m	10%	108096.00	129715.00	136201.00
			40th m	10%	118906.00	142687.00	149821.00
			Total Cost from 30m upto 40m		803684.00	964420.00	1012641.00
			Avg Rate per metre		80368.00	96442.00	101264.00
12.13		C	Soft Rock (7m dia well)				
			Unit = Running Meter.				
			Taking output = 1 m				
			Depth in soft rock strata upto 3m				
			Rate of sinking = 0.22 m per hour.				
		a)	Labour				
			Mate	day	0.58	314.67	182.51
			Sinker (skilled)	day	4.00	414.80	1659.20
			Sinking helper (semi-skilled)	day	10.00	314.67	3146.70
			Diver	day	0.75	414.80	311.10
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1176.12	5292.54
			Air compressor with pneumatic breakers	hour	3.75	513.00	1923.75
			Consumables in sinking @ 10 per cent of (b)				721.63
			Add for dewatering @ of 5 per cent of (a+b), if required				625.79
		c)	Overhead charges @ 0.055 on (a+b)				762.48
		d)	Contractor's profit @ 0.1 on (a+b+c)				1462.57
			Rate per metre = (a+b+c+d)				16088.26
						say	16088.00
12.13		D	Hard Rock (7m dia well)				
			Unit = Running Meter				
			Taking output = 1 m				
			Depth in Hard rock strata up to 3 m				
			Rate of sinking = 0.17 m per hour.				
		a)	Material				
			Gelatine 80 per cent	Kg	7.00	120.72	845.04
			Electric Detonators	each	30.00	5.75	172.37
		b)	Labour				
			Mate	day	1.60	314.67	503.47
			Driller	day	2.00	314.67	629.34

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	18.00	300.36	5406.48
			Mazdoor (Skilled)	day	4.00	414.80	1659.20
			Diver	day	0.50	414.80	207.40
			c) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	513.00	1026.00
			Dewatering @ 5 per cent of cost of (b+c), if required.				829.62
			Consumables in sinking @ 10 per cent of cost of (b).				891.23
			d) Overhead charges @ 0.055 on (a+b+c)				1063.18
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2039.38
			Rate per metre = (a+b+c+d+e)				22433.13
						say	22433.00
12.14	Section 1200		Sinking of 8 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.				
			Unit = Running Meter.				
			Taking output = 1 m				
			Diameter of well - 8 m.				
		A	Sandy Soil				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking @ 0.25 m/hour				
			a) Labour				
			Mate	day	0.18	314.67	56.64
			Sinker (skilled)	day	1.50	414.80	622.20
			Sinking helper (semi-skilled)	day	3.00	314.67	944.01
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1176.12	4704.48
			Consumables in sinking @10 per cent of (b)				470.45
			c) Overhead charges @ 0.055 on (a+b)				373.88
			d) Contractor's profit @ 0.1 on (a+b+c)				717.17
			Rate per metre = (a+b+c+d)				7888.82
						say	7889.00
12.14 A		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.20 m/hour				
			a) Labour				
			Mate	day	0.25	314.67	78.67
			Sinker	day	1.75	414.80	725.90
			Sinking helper (semi-skilled)	day	3.50	314.67	1101.35
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1176.12	5880.60
			Consumables in sinking @10 per cent of (b)				588.06
			c) Overhead charges @ 0.055 on (a+b)				460.60
			d) Contractor's profit @ 0.1 on (a+b+c)				883.52
			Rate per metre = (a+b+c+d)				9718.69
						say	9719.00
12.14 A		(iii)	Beyond 10m upto 20m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
			11th m	5%	10205.00		
			12th m	5%	10715.00		
			13th m	5%	11251.00		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			14th m	5%	11814.00		
			15th m	5%	12405.00		
			16th m	5%	13025.00		
			17th m	5%	13676.00		
			18th m	5%	14360.00		
			19th m	5%	15078.00		
			20th m	5%	15832.00		
			Total Cost from 10m upto 20m		128361.00		
			Avg Rate per metre		12836.00		
12.14 A		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge	
			21st m	7.5%	17019.00	20423.00	
			22nd m	7.5%	18295.00	21954.00	
			23rd m	7.5%	19667.00	23600.00	
			24th m	7.5%	21142.00	25370.00	
			25th m	7.5%	22728.00	27274.00	
			26th m	7.5%	24433.00	29320.00	
			27th m	7.5%	26265.00	31518.00	
			28th m	7.5%	28235.00	33882.00	
			29th m	7.5%	30353.00	36424.00	
			30th m	7.5%	32629.00	39155.00	
			Total Cost from 20m upto 30m		240766.00	288920.00	
			Avg Rate per metre		24077.00	28892.00	
12.14 A		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge	
			31st m	10%	35892.00	43070.00	
			32nd	10%	39481.00	47377.00	
			33rd m	10%	43429.00	52115.00	
			34th m	10%	47772.00	57326.00	
			35th m	10%	52549.00	63059.00	
			36th m	10%	57804.00	69365.00	
			37th m	10%	63584.00	76301.00	
			38th m	10%	69942.00	83930.00	
			39th m	10%	76936.00	92323.00	
			40th m	10%	84630.00	101556.00	
			Total Cost from 30m upto 40m		572019.00	686423.00	
			Avg Rate per metre		57202.00	68642.00	
12.14		B	Clayey Soil (8m dia. Well)				
			Unit = Running Meter.				
			Taking output = 1 meter				
		(i)	Depth from bed level upto 3.0 M				
			Rate of sinking @ 0.18 m/hour				
		a)	Labour				
			Mate	day	0.22	314.67	69.23
			Sinker (skilled)	day	2.00	414.80	829.60
			Sinking helper (semi-skilled)	hour	3.50	314.67	1101.35
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.		5.50	1176.12	6468.66
			Consumables in sinking @ 10 per cent of (b)				646.87
		c)	Overhead charges @ 0.055 on (a+b)				501.36
		d)	Contractor's profit @ 0.1 on (a+b+c)				961.71
			Rate per metre = (a+b+c+d)				10578.77

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
						<i>say</i>	10579.00
12.14 B		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.17 m/hour				
		a)	Labour				
			Mate	day	0.32	314.67	100.69
			Sinker	day	2.50	414.80	1037.00
			Sinking helper (semi-skilled)	day	4.50	314.67	1416.02
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.50	513.00	1795.50
			Consumables in sinking @ 10 per cent of (b)				885.22
		c)	Overhead charges @ 0.055 on (a+b)				676.01
		d)	Contractor's profit @ 0.1 on (a+b+c)				1296.72
			Rate per metre = (a+b+c+d)				14263.88
						<i>say</i>	14264.00
12.14 B		(iii)	Beyond 10 m upto 20 m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if required	
			11th m	5%	14977.00	15726.00	
			12th m	5%	15726.00	16512.00	
			13th m	5%	16512.00	17338.00	
			14th m	5%	17338.00	18205.00	
			15th m	5%	18205.00	19115.00	
			16th m	5%	19115.00	20071.00	
			17th m	5%	20071.00	21075.00	
			18th m	5%	21075.00	22129.00	
			19th m	5%	22129.00	23235.00	
			20th m	5%	23235.00	24397.00	
			Total Cost from 10m upto 20m		188383.00	197803.00	
			Avg Rate per metre		18838.00	19780.00	
12.14 B		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering on the cost, if required				
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	7.5%	24978.00	31223.00	32784.00
			32nd	7.5%	26851.00	33564.00	35242.00
			33rd m	7.5%	28865.00	36081.00	37885.00
			34th m	7.5%	31030.00	38788.00	40727.00
			35th m	7.5%	33357.00	41696.00	43781.00
			36th m	7.5%	35859.00	44824.00	47065.00
			37th m	7.5%	38548.00	48185.00	50594.00
			38th m	7.5%	41439.00	51799.00	54389.00
			39th m	7.5%	44547.00	55684.00	58468.00
			40th m	7.5%	47888.00	59860.00	62853.00
			Total Cost from 30m upto 40m		353362.00	441704.00	463788.00
			Avg Rate per metre		35336.00	44170.00	46379.00
12.14 B		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering, if required				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	10%	52677.00	63212.00	66373.00
			32nd	10%	57945.00	69534.00	73011.00
			33rd m	10%	63740.00	76488.00	80312.00
			34th m	10%	70114.00	84137.00	88344.00
			35th m	10%	77125.00	92550.00	97178.00
			36th m	10%	84838.00	101806.00	106896.00
			37th m	10%	93322.00	111986.00	117585.00
			38th m	10%	102654.00	123185.00	129344.00
			39th m	10%	112919.00	135503.00	142278.00
			40th m	10%	124211.00	149053.00	156506.00
			Total Cost from 30m upto 40m		839545.00	1007454.00	1057827.00
			Avg Rate per metre		83955.00	100745.00	105783.00
12.14		C	Soft Rock (8m dia well)				
			Unit = Running Meter.				
			Taking output = 1 m				
			Depth in soft rock strata upto 3m				
			Rate of sinking @ 0.20 m/hour				
			a) Labour				
			Mate	day	0.68	314.67	213.98
			Sinker (skilled)	day	4.00	414.80	1659.20
			Sinking helper (semi-skilled)	day	12.00	314.67	3776.04
			Diver	day	1.00	414.80	414.80
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1176.12	5880.60
			Air compressor with pneumatic breakers	hour	3.75	513.00	1923.75
			Consumables in sinking @ 10 per cent of (b)				780.44
			Add for dewatering @ of 5 per cent of (a+b), if required				732.44
			c) Overhead charges @ 0.055 on (a+b)				845.97
			d) Contractor's profit @ 0.1 on (a+b+c)				1622.72
			Rate per metre = (a+b+c+d)				17849.93
						say	17850.00
12.14		D	Hard Rock (8m dia well)				
			Unit = Running Meter				
			Taking output = 1 m				
			Depth in hard rock strata upto 3 m				
			Rate of sinking @ 0.17 m/hour				
			a) Material				
			Gelatine 80 per cent	Kg	8.00	120.72	965.76
			Electric Detonators	each	32.00	5.75	183.87
			b) Labour				
			Mate	day	1.09	314.67	342.99
			Driller	day	2.00	314.67	629.34
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	20.00	300.36	6007.20
			Mazdoor (Skilled)	day	4.00	414.80	1659.20
			c) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	513.00	1026.00
			Dewatering @ 5 per cent of cost of (b+c), if required.				841.26
			Consumables in sinking @ 10 per cent of cost of (b).				874.24
			d) Overhead charges @ 0.055 on (a+b+c)				1082.97

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2077.32
			Rate per metre = (a+b+c+d+e)				22850.57
						say	22851.00
12.15	Section 1200		Sinking of 9 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.				
			Unit = Running Meter.				
			Taking output = 1 m				
			Diameter of well - 9 m.				
		A	Sandy Soil				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking @ 0.25 m/hour				
			a) Labour				
			Mate	day	0.19	314.67	59.79
			Sinker (skilled)	day	1.50	414.80	622.20
			Sinking helper (semi-skilled)	day	3.25	314.67	1022.68
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1176.12	4704.48
			Consumables in sinking @10 per cent of (b)				470.45
			c) Overhead charges @ 0.055 on (a+b)				378.38
			d) Contractor's profit @ 0.1 on (a+b+c)				725.80
			Rate per metre = (a+b+c+d)				7983.77
						say	7984.00
12.15 A		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.18 m/hour				
			a) Labour				
			Mate	day	0.27	314.67	84.96
			Sinker	day	1.75	414.80	725.90
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	1176.12	6468.66
			Consumables in sinking @10 per cent of (b)				646.87
			c) Overhead charges @ 0.055 on (a+b)				505.18
			d) Contractor's profit @ 0.1 on (a+b+c)				969.02
			Rate per metre = (a+b+c+d)				10659.27
						say	10659.00
12.15 A		(iii)	Beyond 10m upto 20m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
			11th m	5%	11192.00		
			12th m	5%	11752.00		
			13th m	5%	12340.00		
			14th m	5%	12957.00		
			15th m	5%	13605.00		
			16th m	5%	14285.00		
			17th m	5%	14999.00		
			18th m	5%	15749.00		
			19th m	5%	16536.00		
			20th m	5%	17363.00		
			Total Cost from 10m upto 20m		140778.00		
			Avg Rate per metre		14078.00		
12.15 A		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge	
			21st m	7.5%	18665.23	22398.00	
			22nd m	7.5%	20065.00	24078.00	
			23rd m	7.5%	21570.00	25884.00	
			24th m	7.5%	23188.00	27826.00	
			25th m	7.5%	24927.00	29912.00	
			26th m	7.5%	26797.00	32156.00	
			27th m	7.5%	28807.00	34568.00	
			28th m	7.5%	30968.00	37162.00	
			29th m	7.5%	33291.00	39949.00	
			30th m	7.5%	35788.00	42946.00	
			Total Cost from 20m upto 30m		264066.23	316879.00	
			Avg Rate per metre		26407.00	31688.00	
12.15 A		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge	
			31st m	10%	39366.80	47240.00	
			32nd	10%	43303.00	51964.00	
			33rd m	10%	47633.00	57160.00	
			34th m	10%	52396.00	62875.00	
			35th m	10%	57636.00	69163.00	
			36th m	10%	63400.00	76080.00	
			37th m	10%	69740.00	83688.00	
			38th m	10%	76714.00	92057.00	
			39th m	10%	84385.00	101262.00	
			40th m	10%	92824.00	111389.00	
			Total Cost from 30m upto 40m		627397.80	752878.00	
			Avg Rate per metre		62740.00	75288.00	
12.15		B	Clayey Soil (9m dia. Well)				
			Unit = Running Meter.				
			Taking output = 1 cum				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking 0.17 m / hour				
		a)	Labour				
			Mate	day	0.24	314.67	75.52
			Sinker (skilled)	day	2.25	414.80	933.30
			Sinking helper (semi-skilled)	day	3.75	314.67	1180.01
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	1176.12	6762.69
			Consumables in sinking @ 10 per cent of (b)				676.27
		c)	Overhead charges @ 0.055 on (a+b)				529.53
		d)	Contractor's profit @ 0.1 on (a+b+c)				1015.73
			Rate per metre = (a+b+c+d)				11173.05
						say	11173.00
12.15 B		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking 0.15 m / hour				
		a)	Labour				
			Mate	day	0.34	314.67	106.99
			Sinker	day	2.50	414.80	1037.00
			Sinking helper (semi-skilled)	day	5.00	314.67	1573.35
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1176.12	7644.78
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.75	513.00	1923.75

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Consumables in sinking @ 10 per cent of (b)				956.85
			c) Overhead charges @ 0.055 on (a+b)				728.35
			d) Contractor's profit @ 0.1 on (a+b+c)				1397.11
			Rate per metre = (a+b+c+d)				15368.18
						say	15368.00
12.15 B		(iii)	Beyond 10 m upto 20 m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if required	
			11th m	5%	16136.00	16943.00	
			12th m	5%	16943.00	17790.00	
			13th m	5%	17790.00	18680.00	
			14th m	5%	18680.00	19614.00	
			15th m	5%	19614.00	20595.00	
			16th m	5%	20595.00	21625.00	
			17th m	5%	21625.00	22706.00	
			18th m	5%	22706.00	23841.00	
			19th m	5%	23841.00	25033.00	
			20th m	5%	25033.00	26285.00	
			Total Cost from 10m upto 20m		202963.00	213112.00	
			Avg Rate per metre		20296.00	21311.00	
12.15 B		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering on the cost, if required				
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	7.5%	26910.00	33638.00	35320.00
			32nd	7.5%	28928.00	36160.00	37968.00
			33rd m	7.5%	31098.00	38873.00	40817.00
			34th m	7.5%	33430.00	41788.00	43877.00
			35th m	7.5%	35937.00	44921.00	47167.00
			36th m	7.5%	38632.00	48290.00	50705.00
			37th m	7.5%	41529.00	51911.00	54507.00
			38th m	7.5%	44644.00	55805.00	58595.00
			39th m	7.5%	47992.00	59990.00	62990.00
			40th m	7.5%	51591.00	64489.00	67713.00
			Total Cost from 30m upto 40m		380691.00	475865.00	499659.00
			Avg Rate per metre		38069.00	47587.00	49966.00
12.15 B		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering, if required				
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	10%	56750.00	68100.00	71505.00
			32nd	10%	62425.00	74910.00	78656.00
			33rd m	10%	68668.00	82402.00	86522.00
			34th m	10%	75535.00	90642.00	95174.00
			35th m	10%	83089.00	99707.00	104692.00
			36th m	10%	91398.00	109678.00	115162.00
			37th m	10%	100538.00	120646.00	126678.00
			38th m	10%	110592.00	132710.00	139346.00
			39th m	10%	121651.00	145981.00	153280.00
			40th m	10%	133816.00	160579.00	168608.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Total Cost from 30m upto 40m		904462.00	1085355.00	1139623.00
			Avg Rate per metre		90446.00	108536.00	113962.00
12.15		C	Soft Rock (9m dia well)				
			Unit = Running Meter.				
			Taking output = 1 m				
			Depth in soft rock strata up to 3m				
			Rate of sinking 0.15 m / hour				
			a) Labour				
			Mate	day	0.76	314.67	239.15
			Sinker (skilled)	day	4.00	414.80	1659.20
			Sinking helper (semi-skilled)	day	14.00	314.67	4405.38
			Diver	day	1.20	414.80	497.76
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1176.12	7644.78
			Air compressor with pneumatic breakers	hour	4.00	513.00	2052.00
			Consumables in sinking @ 10 per cent of (b)				969.68
			Add for dewatering @ of 5 per cent of (a+b), if required				1746.79
			c) Overhead charges @ 0.055 on (a+b)				1056.81
			d) Contractor's profit @ 0.1 on (a+b+c)				2027.16
			Rate per metre = (a+b+c+d)				22298.71
						say	22299.00
12.15		D	Hard Rock (9m dia well)				
			Unit = Running Meter				
			Taking output = 1 m				
			Depth in hard rock strata upto 3 m				
			Rate of sinking 0.15 m / hour				
			a) Material				
			Gelatine 80 per cent	Kg	10.00	120.72	1207.20
			Electric Detonators	each	40.00	5.75	229.83
			b) Labour				
			Mate	day	1.17	314.67	368.16
			Driller	day	2.00	314.67	629.34
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	22.00	300.36	6607.92
			Mazdoor (Skilled)	day	4.00	414.80	1659.20
			Diver	day	1.00	414.80	414.80
			c) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	1176.12	8232.84
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.50	513.00	1282.50
			Dewatering @ 5 per cent of cost of (b+c), if required.				964.92
			Consumables in sinking @ 10 per cent of cost of (b).				978.31
			d) Overhead charges @ 0.055 on (a+b+c)				1247.33
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2392.61
			Rate per metre = (a+b+c+d+e)				26318.67
						say	26319.00
12.16	1200		Sinking of 10 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.				
			Unit = Running Meter				
			Taking output = 1 m				
			Diameter of well - 10 m.				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		A	Sandy Soil				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking 0.20 m / hour				
		a)	Labour				
			Mate	day	0.20	314.67	62.93
			Sinker (skilled)	day	1.50	414.80	622.20
			Sinking helper (semi-skilled)	day	3.50	314.67	1101.35
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1176.12	5880.60
			Consumables in sinking @10 per cent of (b)				588.06
		c)	Overhead charges @ 0.055 on (a+b)				454.03
		d)	Contractor's profit @ 0.1 on (a+b+c)				870.92
			Rate per metre = (a+b+c+d)				9580.09
						say	9580.00
12.16 A		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking 0.17 m / hour				
		a)	Labour				
			Mate	day	0.31	314.67	97.55
			Sinker	day	2.00	414.80	829.60
			Sinking helper (semi-skilled)	day	4.25	314.67	1337.35
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	1176.12	6762.69
			Consumables in sinking @10 per cent of (b)				676.27
		c)	Overhead charges @ 0.055 on (a+b)				533.69
		d)	Contractor's profit @ 0.1 on (a+b+c)				1023.71
			Rate per metre = (a+b+c+d)				11260.86
						say	11261.00
12.16 A		(iii)	Beyond 10m upto 20m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
			11th m	5%	11824.00		
			12th m	5%	12415.00		
			13th m	5%	13036.00		
			14th m	5%	13688.00		
			15th m	5%	14372.00		
			16th m	5%	15091.00		
			17th m	5%	15846.00		
			18th m	5%	16638.00		
			19th m	5%	17470.00		
			20th m	5%	18344.00		
			Total Cost from 10m upto 20m		148724.00		
			Avg Rate per metre		14872.00		
12.16 A		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge	
			21st m	7.5%	19720.00	23664.00	
			22nd m	7.5%	21199.00	25439.00	
			23rd m	7.5%	22789.00	27347.00	
			24th m	7.5%	24498.00	29398.00	
			25th m	7.5%	26335.00	31602.00	
			26th m	7.5%	28310.00	33972.00	
			27th m	7.5%	30433.00	36520.00	
			28th m	7.5%	32715.00	39258.00	
			29th m	7.5%	35169.00	42203.00	
			30th m	7.5%	37807.00	45368.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Total Cost from 20m upto 30m		278975.00	334771.00	
			Avg Rate per metre		27898.00	33477.00	
12.16 A		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge	
			31st m	10%	41588.00	49906.00	
			32nd	10%	45747.00	54896.00	
			33rd m	10%	50322.00	60386.00	
			34th m	10%	55354.00	66425.00	
			35th m	10%	60889.00	73067.00	
			36th m	10%	66978.00	80374.00	
			37th m	10%	73676.00	88411.00	
			38th m	10%	81044.00	97253.00	
			39th m	10%	89148.00	106978.00	
			40th m	10%	98063.00	117676.00	
			Total Cost from 30m upto 40m		662809.00	795372.00	
			Avg Rate per metre		66281.00	79537.00	
12.16		B	Clayey Soil (10m dia. Well)				
			Unit = Running Meter				
			Taking output = 1 cum				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking 0.18m/hour.				
		a)	Labour				
			Mate	day	0.25	314.67	78.67
			Sinker (skilled)	day	2.50	414.80	1037.00
			Sinking helper (semi-skilled)	day	5.50	314.67	1730.69
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Consumables in sinking @ 10 per cent of (b)				705.67
		c)	Overhead charges @ 0.055 on (a+b)				583.48
		d)	Contractor's profit @ 0.1 on (a+b+c)				1119.22
			Rate per metre = (a+b+c+d)				12311.45
						say	12311.00
12.16 B		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking 0.15m/hour.				
		a)	Labour				
			Mate	day	0.40	314.67	125.87
			Sinker	day	3.00	414.80	1244.40
			Sinking helper (semi-skilled)	day	5.50	314.67	1730.69
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.00	513.00	2052.00
			Consumables in sinking @ 10 per cent of (b)				910.87
		c)	Overhead charges @ 0.055 on (a+b)				721.63
		d)	Contractor's profit @ 0.1 on (a+b+c)				1384.22
			Rate per metre = (a+b+c+d)				15226.39
						say	15226.00
12.16 B		(iii)	Beyond 10 m upto 20 m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if required	
			11th m	5%	15988.00	16787.00	
			12th m	5%	16787.00	17626.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			13th m	5%	17626.00	18507.00	
			14th m	5%	18507.00	19432.00	
			15th m	5%	19432.00	20404.00	
			16th m	5%	20404.00	21424.00	
			17th m	5%	21424.00	22495.00	
			18th m	5%	22495.00	23620.00	
			19th m	5%	23620.00	24801.00	
			20th m	5%	24801.00	26041.00	
			Total Cost from 10m upto 20m		201084.00	211137.00	
			Avg Rate per metre		20108.00	21114.00	
12.16 B		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering on the cost, if required				
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	7.5%	26661.00	33326.00	34992.00
			32nd	7.5%	28661.00	35826.00	37617.00
			33rd m	7.5%	30811.00	38514.00	40440.00
			34th m	7.5%	33122.00	41403.00	43473.00
			35th m	7.5%	35606.00	44508.00	46733.00
			36th m	7.5%	38276.00	47845.00	50237.00
			37th m	7.5%	41147.00	51434.00	54006.00
			38th m	7.5%	44233.00	55291.00	58056.00
			39th m	7.5%	47550.00	59438.00	62410.00
			40th m	7.5%	51116.00	63895.00	67090.00
			Total Cost from 30m upto 40m		377183.00	471480.00	495054.00
			Avg Rate per metre		37718.00	47148.00	49505.00
12.16 B		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering, if required				
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	10%	56228.00	67474.00	70848.00
			32nd	10%	61851.00	74221.00	77932.00
			33rd m	10%	68036.00	81643.00	85725.15
			34th m	10%	74840.00	89808.00	94298.40
			35th m	10%	82324.00	98789.00	103728.45
			36th m	10%	90556.00	108667.00	114100.35
			37th m	10%	99612.00	119534.00	125510.70
			38th m	10%	109573.00	131488.00	138062.40
			39th m	10%	120530.00	144636.00	151867.80
			40th m	10%	132583.00	159100.00	167055.00
			Total Cost from 30m upto 40m		896133.00	1075360.00	1129128.25
			Avg Rate per metre		89613.00	107536.00	112913.00
12.16		C	Soft Rock (10m dia well)				
			Unit = Running Meter.				
			Taking output = 1 m				
			Depth in soft rock strata upto 3m				
			Rate of sinking 0.14m/hour.				
		a)	Labour				
			Mate	day	0.86	314.67	270.62
			Sinker (skilled)	day	4.00	414.80	1659.20
			Sinking helper (semi-skilled)	day	16.00	314.67	5034.72
			Diver	day	1.40	414.80	580.72
		b)	Machinery				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	1176.12	8232.84
			Air compressor with pneumatic breakers	hour	4.25	513.00	2180.25
			Consumables in sinking @ 10 per cent of (b)				1041.31
			Add for dewatering @ 5 per cent of cost, if required				572.72
			c) Overhead charges @ 0.055 on (a+b)				1076.48
			d) Contractor's profit @ 0.1 on (a+b+c)				2064.89
			Rate per metre = (a+b+c+d)				22713.74
						say	22714.00
12.16		D	Hard Rock (10m dia well)				
			Unit = Running Meter.				
			Taking output = 1 m				
			Depth in hard rock strata upto 3 m				
			Rate of sinking 0.12 m/ hour.				
			a) Material				
			Gelatine 80 per cent	Kg	11.00	120.72	1327.92
			Electric Detonators	each.	44.00	5.75	252.82
			b) Labour				
			Mate	day	1.27	314.67	399.63
			Driller	day	2.00	314.67	629.34
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	24.00	300.36	7208.64
			Mazdoor (Skilled)	day	4.00	414.80	1659.20
			c) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.50	1176.12	9997.02
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	513.00	1539.00
			Dewatering @ 5 per cent of cost (c), if required.				576.80
			Consumables in sinking @ 10 per cent of cost of (b+c).				2211.33
			d) Overhead charges @ 0.055 on (a+b+c)				1424.80
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2733.02
			Rate per metre = (a+b+c+d+e)				30063.22
						say	30063.00
12.17	1200		Sinking of 11 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.				
			Unit = Running Meter				
			Taking output = 0.50 m				
			Diameter of well - 11 m.				
		A	Sandy Soil				
		(i)	Depth from bed level upto 3.0 M				
			Rate of sinking @ 0.15 m/hour				
			a) Labour				
			Mate	day	0.21	314.67	66.08
			Sinker (skilled)	day	1.50	414.80	622.20
			Sinking helper (semi-skilled)	day	3.30	314.67	1038.41
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Consumables in sinking @10 per cent of (b)				705.67
			d) Overhead charges @ 0.055 on (a+b+c)				521.90
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1001.10
			Cost for 0.5m = a+b+c+d				11012.08
			Rate per metre = (a+b+c+d)/0.50				22024.16
						say	22024.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
12.17 A		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.13 m/hour				
		a)	Labour				
			Mate	day	0.32	314.67	100.69
			Sinker	day	2.00	414.80	829.60
			Sinking helper (semi-skilled)	day	4.50	314.67	1416.02
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1176.12	4704.48
			Consumables in sinking @10 per cent of (b)				470.45
		c)	Overhead charges @ 0.055 on (a+b+c)				413.67
		d)	Contractor's profit @ 0.1 on (a+b+c+d)				793.49
			Cost for 0.5m = a+b+c+d				8728.40
			Rate per metre = (a+b+c+d)/0.50				17456.79
						say	17457.00
12.17 A		(iii)	Beyond 10m upto 20m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
			11th m	5%	18330.00		
			12th m	5%	19247.00		
			13th m	5%	20209.00		
			14th m	5%	21219.00		
			15th m	5%	22280.00		
			16th m	5%	23394.00		
			17th m	5%	24564.00		
			18th m	5%	25792.00		
			19th m	5%	27082.00		
			20th m	5%	28436.00		
			Total Cost from 10m upto 20m		230553.00		
			Avg Rate per metre		23055.00		
12.17 A		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge	
			21st m	7.5%	30569.00	36683.00	
			22nd m	7.5%	32862.00	39434.00	
			23rd m	7.5%	35327.00	42392.00	
			24th m	7.5%	37977.00	45572.00	
			25th m	7.5%	40825.00	48990.00	
			26th m	7.5%	43887.00	52664.00	
			27th m	7.5%	47179.00	56615.00	
			28th m	7.5%	50717.00	60860.00	
			29th m	7.5%	54521.00	65425.00	
			30th m	7.5%	58610.00	70332.00	
			Total Cost from 20m upto 30m		432474.00	518967.00	
			Avg Rate per metre		43247.00	51897.00	
12.17 A		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge	
			31st m	10%	64471.00	77365.00	
			32nd	10%	70918.00	85102.00	
			33rd m	10%	78010.00	93612.00	
			34th m	10%	85811.00	102973.00	
			35th m	10%	94392.00	113270.00	
			36th m	10%	103831.00	124597.00	
			37th m	10%	114214.00	137057.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			38th m	10%	125635.00	150762.00	
			39th m	10%	138199.00	165839.00	
			40th m	10%	152019.00	182423.00	
			Total Cost from 30m upto 40m		1027500.00	1233000.00	
			Avg Rate per metre		102750.00	123300.00	
12.17		B	Clayey Soil (11 m dia. Well)				
			Unit = Running Meter				
			Taking output = 0.50 meter				
		(i)	Depth from bed level upto 3.0 M				
			Rate of sinking @ 0.10 m/hour				
		a)	Labour				
			Mate	day	0.26	314.67	81.81
			Sinker (skilled)	day	2.50	414.80	1037.00
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1176.12	5880.60
			Consumables in sinking @ 10 per cent of (b)				588.06
		c)	Overhead charges @ 0.055 on (a+b)				486.54
		d)	Contractor's profit @ 0.1 on (a+b+c)				933.27
			Cost for 0.5m = a+b+c+d				10265.96
			Rate per metre = (a+b+c+d)/0.50				20531.92
						say	20532.00
12.17 B		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.08 m/hour				
		a)	Labour				
			Mate	day	0.43	314.67	135.31
			Sinker	day	3.50	414.80	1451.80
			Sinking helper (semi-skilled)	day	5.75	314.67	1809.35
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.25	513.00	2180.25
			Consumables in sinking @ 10 per cent of (b)				923.70
		c)	Overhead charges @ 0.055 on (a+b)				745.64
		d)	Contractor's profit @ 0.1 on (a+b+c)				1430.28
			Cost for 0.5m = a+b+c+d				15733.05
			Rate per metre = (a+b+c+d)/0.50				31466.09
						say	31466.00
12.17 B		(iii)	Beyond 10 m upto 20 m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if required	
			11th m	5%	33039.00	34691.00	
			12th m	5%	34691.00	36426.00	
			13th m	5%	36426.00	38247.00	
			14th m	5%	38247.00	40159.00	
			15th m	5%	40159.00	42167.00	
			16th m	5%	42167.00	44275.00	
			17th m	5%	44275.00	46489.00	
			18th m	5%	46489.00	48813.00	
			19th m	5%	48813.00	51254.00	
			20th m	5%	51254.00	53817.00	
			Total Cost from 10m upto 20m		415560.00	436338.00	
			Avg Rate per metre		41556.00	43634.00	
12.17 B		(iv)	Beyond 20m upto 30 m				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering on the cost, if required				
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required
			21st m	7.5%	55098.00	68873.00	72317.00
			22nd	7.5%	59230.00	74038.00	77740.00
			23rd m	7.5%	63672.00	79590.00	83570.00
			24th m	7.5%	68447.00	85559.00	89837.00
			25th m	7.5%	73581.00	91976.00	96575.00
			26th m	7.5%	79100.00	98875.00	103819.00
			27th m	7.5%	85033.00	106291.00	111606.00
			28th m	7.5%	91410.00	114263.00	119976.00
			29th m	7.5%	98266.00	122833.00	128975.00
			30th m	7.5%	105636.00	132045.00	138647.00
			Total Cost from 20m upto 30m		779473.00	974343.00	1023060.00
			Avg Rate per metre		77947.00	97434.00	102306.00
12.17 B		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering, if required				
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required
			31st m	10%	116200.00	139440.00	146412.00
			32nd	10%	127820.00	153384.00	161053.00
			33rd m	10%	140602.00	168722.00	177158.00
			34th m	10%	154662.00	185594.00	194874.00
			35th m	10%	170128.00	204154.00	214362.00
			36th m	10%	187141.00	224569.00	235797.00
			37th m	10%	205855.00	247026.00	259377.00
			38th m	10%	226441.00	271729.00	285315.00
			39th m	10%	249085.00	298902.00	313847.00
			40th m	10%	273994.00	328793.00	345233.00
			Total Cost from 30m upto 40m		1851928	2222313	2333428
			Avg Rate per metre		185193.00	222231.00	233343.00
12.17		C	Soft Rock (11m dia well)				
			Unit = Running Meter.				
			Taking output = 0.50 m				
			Depth in soft rock strata upto 3m				
			Rate of sinking @ 0.06 m/hour				
		a)	Labour				
			Mate	day	0.95	314.67	298.94
			Sinker (skilled)	day	4.25	414.80	1762.90
			Sinking helper (semi-skilled)	day	18.00	314.67	5664.06
			Diver	day	1.50	414.80	622.20
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.00	1176.12	9408.96
			Air compressor with pneumatic breakers	hour	4.50	513.00	2308.50
			Consumables in sinking @ 10 per cent of (b)				1171.75
			Add for dewatering @ 5 per cent of cost of (b), if required				644.46
		c)	Overhead charges @ 0.055 on (a+b)				1203.50
		d)	Contractor's profit @ 0.1 on (a+b+c)				2308.53
			Cost for 0.5m = a+b+c+d				25393.79
			Rate per metre = (a+b+c+d)/0.50				50787.57
						say	50788.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
12.17		D	Hard Rock (11m dia well)				
			<i>Unit = Running Meter.</i>				
			<i>Taking output = 0.50 m</i>				
			Depth in hard rock upto 3 m				
			Rate of sinking @ 0.05 m/hour				
		a)	Material				
			Gelatine 80 per cent	Kg	12.00	120.72	1448.64
			Electric Detonators	each.	48.00	5.75	275.80
		b)	Labour				
			Mate	day	1.35	314.67	424.80
			Driller	day	2.00	314.67	629.34
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	26.00	300.36	7809.36
			Mazdoor (Skilled)	day	4.00	414.80	1659.20
		c)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1176.12	11761.20
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.50	513.00	1795.50
			Dewatering @ 5 per cent of cost (c), if required.				677.84
			Consumables in sinking @ 10 per cent of cost of (b+c).				2418.31
		d)	Overhead charges @ 0.055 on (a+b+c)				1595.20
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				3059.89
			Cost for 0.5m = a+b+c+d				33658.78
			Rate per metre = (a+b+c+d)/0.50				67317.56
						<i>say</i>	67318.00
12.18	1200		Sinking of 12 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.				
			<i>Unit = Running Meter</i>				
			<i>Taking output = 0.25 m</i>				
			Diameter of well - 12 m.				
		A	Sandy Soil				
		(i)	l) Depth below bed level upto 3.0 M				
			Rate of sinking @ 0.05 m/hour				
		a)	Labour				
			Mate	day	0.22	314.67	69.23
			Sinker (skilled)	day	1.75	414.80	725.90
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72
			Consumables in sinking @10 per cent of (b)				705.67
		c)	Overhead charges @ 0.055 on (a+b)				539.89
		d)	Contractor's profit @ 0.1 on (a+b+c)				1035.61
			Cost for 0.25m = a+b+c+d				11391.70
			Rate per metre = (a+b+c+d)/0.25				45566.80
						<i>say</i>	45567.00
12.18 A		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.038 m/hour				
		a)	Labour				
			Mate	day	0.37	314.67	116.43
			Sinker	day	2.50	414.80	1037.00
			Sinking helper (semi-skilled)	day	4.75	314.67	1494.68
		b)	Machinery				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1176.12	7644.78
			Consumables in sinking @10 per cent of (b)				764.48
			c) Overhead charges @ 0.055 on (a+b)				608.16
			d) Contractor's profit @ 0.1 on (a+b+c)				1166.55
			Cost for 0.25m = a+b+c+d				12832.08
			Rate per metre = (a+b+c+d)/0.25				51328.30
						say	51328.00
12.18 A		(iii)	Beyond 10m upto 20m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
			11th m	5%	53894.00		
			12th m	5%	56589.00		
			13th m	5%	59418.00		
			14th m	5%	62389.00		
			15th m	5%	65508.00		
			16th m	5%	68783.00		
			17th m	5%	72222.00		
			18th m	5%	75833.00		
			19th m	5%	79625.00		
			20th m	5%	83606.00		
			Total Cost from 10m upto 20m		677867.00		
			Avg Rate per metre		67787.00		
12.18 A		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge	
			21st m	7.5%	89876.00	107851.00	
			22nd m	7.5%	96617.00	115940.00	
			23rd m	7.5%	103863.00	124636.00	
			24th m	7.5%	111653.00	133984.00	
			25th m	7.5%	120027.00	144032.00	
			26th m	7.5%	129029.00	154835.00	
			27th m	7.5%	138706.00	166447.00	
			28th m	7.5%	149109.00	178931.00	
			29th m	7.5%	160292.00	192350.00	
			30th m	7.5%	172314.00	206777.00	
			Total Cost from 20m upto 30m		1271486.00	1525783.00	
			Avg Rate per metre		127149.00	152578.00	
12.18 A		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge	
			31st m	10%	189545.00	227454.00	
			32nd	10%	208500.00	250200.00	
			33rd m	10%	229350.00	275220.00	
			34th m	10%	252285.00	302742.00	
			35th m	10%	277514.00	333017.00	
			36th m	10%	305265.00	366318.00	
			37th m	10%	335792.00	402950.00	
			38th m	10%	369371.00	443245.00	
			39th m	10%	406308.00	487570.00	
			40th m	10%	446939.00	536327.00	
			Total Cost from 30m upto 40m		3020869	3625043	
			Avg Rate per metre		302087.00	362504.00	
12.18		B	Clayey Soil (12 m dia. Well)				
			Unit = Running Meter.				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			<i>Taking output = 0.25 meter.</i>				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking @ 0.04 m/hour				
		a)	Labour				
			Mate	day	0.30	314.67	94.40
			Sinker (skilled)	day	3.00	414.80	1244.40
			Sinking helper (semi-skilled)	day	4.50	314.67	1416.02
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	1176.12	7350.75
			Consumables in sinking @ 10 per cent of (b)				735.08
		c)	Overhead charges @ 0.055 on (a+b)				596.24
		d)	Contractor's profit @ 0.1 on (a+b+c)				1143.69
			Cost for 0.25m = a+b+c+d				12580.56
			Rate per metre = (a+b+c+d)/0.25				50322.26
						<i>say</i>	50322.00
12.18 B		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.03 m/hour				
		a)	Labour				
			Mate	day	0.48	314.67	151.04
			Sinker	day	3.75	414.80	1555.50
			Sinking helper (semi-skilled)	day	6.00	314.67	1888.02
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	1176.12	9797.08
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	513.00	2308.50
			Consumables in sinking @ 10 per cent of (b)				1210.56
		c)	Overhead charges @ 0.055 on (a+b)				930.09
		d)	Contractor's profit @ 0.1 on (a+b+c)				1784.08
			Cost for 0.25m = a+b+c+d				19624.87
			Rate per metre = (a+b+c+d)/0.25				78499.47
						<i>say</i>	78499.00
12.18 B		(iii)	Beyond 10 m upto 20 m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if required	
			11th m	5%	82424.00	86545.00	
			12th m	5%	86545.00	90872.00	
			13th m	5%	90872.00	95416.00	
			14th m	5%	95416.00	100187.00	
			15th m	5%	100187.00	105196.00	
			16th m	5%	105196.00	110456.00	
			17th m	5%	110456.00	115979.00	
			18th m	5%	115979.00	121778.00	
			19th m	5%	121778.00	127867.00	
			20th m	5%	127867.00	134260.00	
			Total Cost from 10m upto 20m		1036720.00	1088556.00	
			Avg Rate per metre		103672.00	108856.00	
12.18 B		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering on the cost, if required				
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required
			21st m	7.5%	137457.00	171821.00	180412.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			22nd	7.5%	147766.00	184708.00	193943.00
			23rd m	7.5%	158848.00	198560.00	208488.00
			24th m	7.5%	170762.00	213453.00	224126.00
			25th m	7.5%	183569.00	229461.00	240934.00
			26th m	7.5%	197337.00	246671.00	259005.00
			27th m	7.5%	212137.00	265171.00	278430.00
			28th m	7.5%	228047.00	285059.00	299312.00
			29th m	7.5%	245151.00	306439.00	321761.00
			30th m	7.5%	263537.00	329421.00	345892.00
			Total Cost from 20m upto 30m		1944611	2430764	2552303
			Avg Rate per metre		194461.00	243076.00	255230.00
12.18 B		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering, if required				
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required
			31st m	10%	289891.00	347869.00	365262.00
			32nd	10%	318880.00	382656.00	401789.00
			33rd m	10%	350768.00	420922.00	441968.00
			34th m	10%	385845.00	463014.00	486165.00
			35th m	10%	424430.00	509316.00	534782.00
			36th m	10%	466873.00	560248.00	588260.00
			37th m	10%	513560.00	616272.00	647086.00
			38th m	10%	564916.00	677899.00	711794.00
			39th m	10%	621408.00	745690.00	782975.00
			40th m	10%	683549.00	820259.00	861272.00
			Total Cost from 30m upto 40m		4620120	5544145	5821353
			Avg Rate per metre		462012.00	554415.00	582135.00
12.18		C	Soft Rock (12m dia well)				
			Unit = Running Meter				
			Taking output = 0.25 m				
			Depth in soft rock strata upto 3m				
			Rate of sinking @ 0.025 m/hour				
		a)	Labour				
			Mate	day	1.06	314.67	333.55
			Sinker (skilled)	day	4.50	414.80	1866.60
			Sinking helper (semi-skilled)	day	20.00	314.67	6293.40
			Diver	day	1.75	414.80	725.90
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1176.12	11761.20
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.75	513.00	2436.75
			Consumables in sinking @ 10 per cent of (b)				1419.80
			Add for dewatering @ 5 per cent, if required				780.89
		c)	Overhead charges @ 0.055 on (a+b)				1408.99
		d)	Contractor's profit @ 0.1 on (a+b+c)				2702.71
			Cost for 0.25m = a+b+c+d				29729.78
			Rate per metre = (a+b+c+d)/0.25				118919.14
						say	118919.00
12.18		D	Hard Rock (12m dia well)				
			Unit = Running Meter				
			Taking output = 0.25 m				
		(i)	Depth in hard rock strata upto 3 m				
			Rate of sinking @ 0.020 m/hour				
		a)	Material				
			Gelatine80 per cent	Kg	14.00	120.72	1690.08

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Electric detonator	each.	56.00	5.75	321.76
			b) Labour				
			Mate	day	1.44	314.67	453.12
			Driller	day	2.00	314.67	629.34
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	28.00	300.36	8410.08
			Mazdoor (Skilled)	day	4.50	414.80	1866.60
			c) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	12.50	1176.12	14701.50
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	4.00	513.00	2052.00
			Dewatering @ 5 per cent, if required.				837.68
			Consumables in sinking @ 10 per cent of (c).				1759.12
			d) Overhead charges @ 0.055 on (a+b+c)				1805.37
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3463.04
			Cost for 0.25m = a+b+c+d+e				38093.39
			Rate per metre = (a+b+c+d+e)/0.25				152373.57
						say	152374.00
12.19	1200		Sinking of Twin D Type well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.				
			Unit = Running Meter				
			Taking output = 1 m				
			Dimensions of well.				
			Overall length = 12 m				
			Overall width = 6 m				
		A	Sandy Soil				
		(i)	Depth from bed level upto 3.0 M				
			Rate of sinking @ 0.18 m/hour				
			a) Labour				
			Mate	day	0.20	314.67	62.93
			Sinker (skilled)	day	1.25	414.80	518.50
			Sinking helper (semi-skilled)	day	3.75	314.67	1180.01
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	1176.12	6468.66
			Consumables in sinking @10 per cent of (b)				646.87
			c) Overhead charges @ 0.055 on (a+b)				488.23
			d) Contractor's profit @ 0.1 on (a+b+c)				936.52
			Rate per metre = (a+b+c+d)				10301.73
						say	10302.00
12.19 A		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.17 m/hour				
			a) Labour				
			Mate	day	0.30	314.67	94.40
			Sinker	day	1.50	414.80	622.20
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.88	1176.12	6915.59
			Consumables in sinking @10 per cent of (b)				691.56
			c) Overhead charges @ 0.055 on (a+b)				527.03
			d) Contractor's profit @ 0.1 on (a+b+c)				1010.95
			Rate per metre = (a+b+c+d)				11120.40
						say	11120.00
12.19 A		(iii)	Beyond 10m upto 20m				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
			11th m	5%	11676.00		
			12th m	5%	12260.00		
			13th m	5%	12873.00		
			14th m	5%	13517.00		
			15th m	5%	14193.00		
			16th m	5%	14903.00		
			17th m	5%	15648.00		
			18th m	5%	16430.00		
			19th m	5%	17252.00		
			20th m	5%	18115.00		
			Total Cost from 10m upto 20m		146867.00		
			Avg Rate per metre		14687.00		
12.19 A		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge	
			21st m	7.5%	19474.00	23369.00	
			22nd m	7.5%	20935.00	25122.00	
			23rd m	7.5%	22505.00	27006.00	
			24th m	7.5%	24193.00	29032.00	
			25th m	7.5%	26007.00	31208.00	
			26th m	7.5%	27958.00	33550.00	
			27th m	7.5%	30055.00	36066.00	
			28th m	7.5%	32309.00	38771.00	
			29th m	7.5%	34732.00	41678.00	
			30th m	7.5%	37337.00	44804.00	
			Total Cost from 20m upto 30m		275505.00	330606.00	
			Avg Rate per metre		27551.00	33061.00	
12.19 A		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge	
			31st m	10%	41071.00	49285.00	
			32nd	10%	45178.00	54214.00	
			33rd m	10%	49696.00	59635.00	
			34th m	10%	54666.00	65599.00	
			35th m	10%	60133.00	72160.00	
			36th m	10%	66146.00	79375.00	
			37th m	10%	72761.00	87313.00	
			38th m	10%	80037.00	96044.00	
			39th m	10%	88041.00	105649.00	
			40th m	10%	96845.00	116214.00	
			Total Cost from 30m upto 40m		654574.00	785488.00	
			Avg Rate per metre		65457.00	78549.00	
12.19		B	Clayey Soil (Twin D Type Well)				
			Unit = Running Meter				
			Taking output = 1 meter				
		(i)	Depth below bed level upto 3.0 M				
			Rate of sinking @ 0.16 m/hour				
		a)	Labour				
			Mate	day	0.26	314.67	81.81
			Sinker (skilled)	day	2.50	414.80	1037.00
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68
		b)	Machinery				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	1176.12	7350.75
			Consumables in sinking @ 10 per cent of (b)				735.08
			c) Overhead charges @ 0.055 on (a+b)				575.48
			d) Contractor's profit @ 0.1 on (a+b+c)				1103.88
			Rate per metre = (a+b+c+d)				12142.68
						say	12143.00
12.19 B		(ii)	Beyond 3m upto 10m depth				
			Rate of sinking @ 0.15 m/hour				
			a) Labour				
			Mate	day	0.45	314.67	141.60
			Sinker	day	3.25	414.80	1348.10
			Sinking helper (semi-skilled)	day	6.00	314.67	1888.02
			b) Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.67	1176.12	7844.72
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	513.00	2308.50
			Consumables in sinking @ 10 per cent of (b)				1015.32
			c) Overhead charges @ 0.055 on (a+b)				800.04
			d) Contractor's profit @ 0.1 on (a+b+c)				1534.63
			Rate per metre = (a+b+c+d)				16880.94
						say	16881.00
12.19 B		(iii)	Beyond 10 m upto 20 m				
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if required	
			11th m	5%	17725.00	18611.00	
			12th m	5%	18611.00	19542.00	
			13th m	5%	19542.00	20519.00	
			14th m	5%	20519.00	21545.00	
			15th m	5%	21545.00	22622.00	
			16th m	5%	22622.00	23753.00	
			17th m	5%	23753.00	24941.00	
			18th m	5%	24941.00	26188.00	
			19th m	5%	26188.00	27497.00	
			20th m	5%	27497.00	28872.00	
			Total Cost from 10m upto 20m		222943.00	234090.00	
			Avg Rate per metre		22294.00	23409.00	
12.19 B		(iv)	Beyond 20m upto 30 m				
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering on the cost, if required				
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required
			21st m	7.5%	29559.00	36949.00	38796.00
			22nd	7.5%	31776.00	39720.00	41706.00
			23rd m	7.5%	34159.00	42699.00	44834.00
			24th m	7.5%	36721.00	45901.00	48196.00
			25th m	7.5%	39475.00	49344.00	51811.00
			26th m	7.5%	42436.00	53045.00	55697.00
			27th m	7.5%	45619.00	57024.00	59875.00
			28th m	7.5%	49040.00	61300.00	64365.00
			29th m	7.5%	52718.00	65898.00	69193.00
			30th m	7.5%	56672.00	70840.00	74382.00
			Total Cost from 20m upto 30m		418175.00	522720.00	548855.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Avg Rate per metre		41818.00	52272.00	54886.00
12.19 B		(v)	Beyond 30m upto 40 m				
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter				
		b	Add 5 per cent of cost for dewatering, if required				
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required
			31st m	10%	62339.00	74807.00	78547.00
			32nd	10%	68573.00	82288.00	86402.00
			33rd m	10%	75430.00	90516.00	95042.00
			34th m	10%	82973.00	99568.00	104546.00
			35th m	10%	91270.00	109524.00	115000.00
			36th m	10%	100397.00	120476.00	126500.00
			37th m	10%	110437.00	132524.00	139150.00
			38th m	10%	121481.00	145777.00	153066.00
			39th m	10%	133629.00	160355.00	168373.00
			40th m	10%	146992.00	176390.00	185210.00
			Total Cost from 30m upto 40m		993521.00	1192225.00	1251836.00
			Avg Rate per metre		99352.00	119223.00	125184.00
12.19		C	Soft Rock (Twin D Type Well)				
			Unit = Running Meter				
			Taking output = 1 m				
			Depth in soft rock strata upto 3m				
			Rate of sinking @ 0.12 m/hour				
		a)	Labour				
			Mate	day	0.86	314.67	270.62
			Sinker (skilled)	day	4.50	414.80	1866.60
			Sinking helper (semi-skilled)	day	15.00	314.67	4720.05
			Diver	day	1.50	414.80	622.20
		b)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	1176.12	9797.08
			Air compressor with pneumatic breakers	hour	6.00	513.00	3078.00
			Consumables in sinking @ 10 per cent of (b)				1287.51
			Add for dewatering @ 5 per cent, if required				708.13
		c)	Overhead charges @ 0.055 on (a+b)				1229.26
		d)	Contractor's profit @ 0.1 on (a+b+c)				2357.94
			Rate per metre = (a+b+c+d)				25937.39
						say	25937.00
12.19		D	Hard Rock (Twin D Type Well)				
			Unit = Running Meter				
			Taking output = 1 m				
			Depth in hard rock strata upto 3 m				
			Rate of sinking @ 0.10 m/hour				
		a)	Material				
			Geletine80 per cent	Kg	10.00	120.72	1207.20
			Electric detonators	each.	40.00	5.75	229.83
		b)	Labour				
			Mate	day	1.34	314.67	421.66
			Driller	day	2.00	314.67	629.34
			Blaster	day	0.25	414.80	103.70
			Mazdoor	day	25.00	300.36	7509.00
			Mazdoor (Skilled)	day	4.25	414.80	1762.90
		c)	Machinery				
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1176.12	11761.20

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	513.00	1539.00
			Dewatering @ 5 per cent of cost of (b+c), if required.				1186.34
			Consumables in sinking @ 10 per cent of (b).				1448.65
			d) Overhead charges @ 0.055 on (a+b+c)				1528.94
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2932.78
			Rate per metre = (a+b+c+d+e)				32260.53
						say	32261.00
12.20	1200		Pneumatic sinking of wells with equipment of approved design, drawing and specifications worked by competent and trained personnel and comprising of compression and decompression chambers, reducers, two air locks separately for men and plant & materials, arrangement for supply of fresh air to working chambers, check valves, exhaust valves, shafts made from steel plates of riveted construction not less than 6 mm thick to withstand an air pressure of 0.50 MPa, controlled blasting of hard rock where required, staircases and 1 m wide landing platforms with railing, arrangement for compression and decompression, electric lighting of 50 V maximum, proper rooms for rest and medical examinations and compliance with safety precautions as per IS:4138, all as per clause 1207.6 of MoRTH Specifications.				
			Unit - 1 cum				
			Taking output = 5 cum				
			a) Material				
			M35 grade RCC corbel provided for supporting of equipment (Dimensions as per ground conditions). Rate may be adopted vide Item 12.8 (H)	Cum	8.00	3597.00	28776.00
			HYSD bar reinforcement in corbel	tonne	0.48	55375.00	26580.00
			Blasting material				
			Gelatine 80 per cent	Kg	1.50	120.72	181.08
			Electric detonators	each	6.00	5.75	34.47
			b) Labour				
			Medical Officer	day	0.50	479.16	239.58
			Para medical personnel	day	1.00	414.80	414.80
			Mate	day	1.86	314.67	585.29
			Driller	day	1.00	314.67	314.67
			Blaster	day	0.50	414.80	207.40
			Mazdoor (for cutting, blasting, cleaning, removal of Material etc.)	day	30.00	300.36	9010.80
			Mazdoor (Skilled) (for fixation and removal of adopter for air lock, carrying out mechanical and electrical operations and repairs and other skilled jobs.)	day	10.00	414.80	4148.00
			Diver	day	4.00	414.80	1659.20
			c) Machinery				
			(i) Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	6.00	Value	#VALUE!
			Induction and deinduction	L.S			100000.00
			Erection at site and commissioning	L.S			150000.00
			Usage of plant and equipment for pneumatic method of well sinking	hour	6.00	3834.00	23004.00
			Air compressor 250 cfm, 2 nos.	hour	2 x 6	293.76	3525.12
			Hire and running charges of crane of 15 tonne capacity	hour	6.00	770.04	4620.24
			Motorised barge of 20 tonne capacity	hour	6.00	142.56	855.36
			Boat to carry atleast 20 persons	hour	6.00	142.56	855.36
			Electric generating set 33 KVA	hour	6.00	342.36	2054.16

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Tipper 10 tonne capacity	hour	6.00	1010.00	6060.00
			d) Overhead charges @ 0.055 on (a+b+c)				#VALUE!
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!
			Cost for 5 cum = a+b+c+d+e (see notes below)				#VALUE!
			Rate per cum = (a+b+c+d+e)/5				#VALUE!
		Note	1.The cost of induction, deinduction and erection of equipment shall be divided by the total quantity of pneumatic sinking for all the wells of a particular bridge to arrive at the per cum rate on account of this item.				
			2.Cost of pneumatic sinking per cum of individual wells will be added to the cost indicated at (1) above to arrive at the final rate of pneumatic sinking per cum.				
			3.The cost of induction and deinduction will depend upon the distance involved for shifting of equipment which may be assessed in individual cases as per actual ground conditions at the time of making of cost estimates.				
			4.In case pneumatic sinking is involved on a dry bed, the provision of barge and boat may be omitted.				
			5.The necessity and dimensions of the corbel will be as per actual ground conditions.				
			6.Small equipments like welding sets, pumps, vibrators, pneumatic tools, portable lamps, fire extinguishers, hose pipes etc., have not been included as the same are covered as items of minor T&P under overhead charges.				
			7.Depth of sinking shall be restricted to 30 m.				
12.21	1207		Sand Filling in Wells complete as per Drawing and Technical Specifications.				
			Unit = 1 cum				
			Taking output = 1 cum				
			a) Material				
			Sand (assuming 20 per cent voids)	cum	1.20	252.20	302.64
			b) Labour				
			Mate	day	0.01	314.67	3.15
			Mazdoor	day	0.30	300.36	90.11
			c) Overhead charges @ 0.055 on (a+b)				21.77
			d) Contractor's profit @ 0.1 on (a+b+c)				41.77
			Rate per cum (a+b+c+d)				459.44
						say	459.00
12.22	1200 & 1900		Providing Steel Liner 10 mm thick for Curbs and 6 mm thick for Steining of Wells including Fabricating and Setting out as per Detailed Drawing.				
			Unit = 1 MT				
			Taking output = 1 MT				
			a) Material				
			i) Structural steel including 5 per cent wastage	tonne	1.05	55000.00	57750.00
			b) Labour				
			Mate	day	1.24	314.67	390.19
			Fitter	day	6.00	414.80	2488.80
			Blacksmith	day	5.00	414.80	2074.00
			Welder	day	5.00	479.16	2395.80
			Mazdoor	day	10.00	300.36	3003.60
			Electrodes, cutting gas and other consumables @ 5 per cent on cost a (a) above.				2887.50
			c) Overhead charges @ 0.055 on (a+b)				3904.44
			d) Contractor's profit @ 0.1 on (a+b+c)				7489.43
			Rate for per MT (a+b+c+d)				82383.77
						say	82384.00
12.23	1100 & 1700		Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.				
			Pile diameter-750 mm				

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs
		Unit = meter				
		Taking output = 15 m				
		a) Materials				
		PCC Grade M35	cum	6.62	4405.00	29161.10
		Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)				
		Concrete to be cast with a tremie pipe 200mm dia.				
		b) Machinery(for boring and construction)				
		Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5023.08	30138.48
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	540.10	270.05
		Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig	
		Loader I cum bucket capacity.	hour	0.30	900.00	270.00
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	1010.00	303.00
		Bentonite	kg	300.00	2.96	888.00
		c) Labour				
		Mate/Supervisor	day	0.14	314.67	44.05
		Mazdoor	day	3.50	300.36	1051.26
		d) Overhead charges @ 0.055 on (b+c)				1813.07
		e) Contractor's profit @ 0.1 on (b+c+d)				3477.79
		Cost for 15 m = a+b+c+d+e				67416.80
		Rate per metre (a+b+c+d+e)/15				4494.45
					say	4494.00
12.24	1100,1600 & 1700	Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.				
		Pile diameter-1000 mm				
		Unit = meter				
		Taking output = 10 m				
		a) Materials				
		PCC Grade M35	cum	7.85	4405.00	34579.25
		Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)				
		Concrete to be cast with a tremie pipe 200mm dia.				
		b) Machinery(for boring and construction)				
		Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5023.08	30138.48
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	540.10	270.05
		Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig	
		Loader I cum bucket capacity.	hour	0.40	900.00	360.00
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.40	1010.00	404.00
		Bentonite	kg	350.00	2.96	1036.00
		c) Labour				
		Mate/Supervisor	day	0.16	314.67	50.35
		Mazdoor	day	4.00	300.36	1201.44
		d) Overhead charges @ 0.055 on (b+c)				1840.32
		e) Contractor's profit @ 0.1 on (b+c+d)				3530.06
		Cost for 10 m = a+b+c+d+e				73409.95
		Rate per metre (a+b+c+d+e)/10				7340.99
					say	7341.00

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
12.25	1100 & 1700		Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.				
			Pile diameter-1200 mm				
			Unit = meter				
			Taking output = 9 m				
			a) Materials				
			PCC Grade M35	cum	10.17	4405.00	44798.85
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)				
			Concrete to be cast with a tremie pipe 200mm dia.				
			b) Machinery(for boring and construction)				
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5023.08	30138.48
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	540.10	270.05
			Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig	
			Loader 1 cum bucket capacity.	hour	0.50	900.00	450.00
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.50	1010.00	505.00
			Bentonite	kg	385.00	2.96	1139.60
			c) Labour				
			Mate/Supervisor	day	0.18	314.67	56.64
			Mazdoor	day	4.50	300.36	1351.62
			d) Overhead charges @ 0.055 on (b+c)				1865.13
			e) Contractor's profit @ 0.1 on (b+c+d)				3577.65
			Cost for 9 m = a+b+c+d+e				84153.02
			Rate per metre (a+b+c+d+e)/9				9350.34
						say	9350.00
12.26	1100 & 1700		Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification				
			Pile diameter - 750 mm				
			Unit = Running meter				
			Taking output = 40 metre				
			a) Materials				
			PCC Grade M35	cum	17.66	4405.00	77792.30
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)				
			b) Materials Pile shoes				
			i) C.I. shoes for the pile	Kg	160.00	44.38	7100.80
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	43.00	3010.00
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	54.77	2738.50
			c) Machinery				
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories..	hour	6.00	5023.08	30138.48
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	599.40	299.70
			d) Labour				
			Mate/Supervisor	day	0.12	314.67	37.76
			Mazdoor	day	3.00	300.36	901.08
			e) Overhead charges @ 0.055 on (b+c+d)				2432.45
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4665.88
			Cost for 40 m = a+b+c+d+e				129116.94
			Rate per metre (a+b+c+d+e)/40				3227.92

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
						<i>say</i>	3228.00
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.				
12.27	1100 & 1700		Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification				
			Pile diameter - 1000 mm				
			<i>Unit = Running meter</i>				
			<i>Taking output = 30 metre</i>				
			a) Materials				
			PCC Grade M35	cum	23.55	4405.00	103737.75
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)				
			b) Materials Pile shoes				
			i) C.I. shoes for the pile	Kg	160.00	44.38	7100.80
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	43.00	3010.00
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	54.77	2738.50
			c) Machinery				
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	5023.08	30138.48
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	599.40	299.70
			Hire and running charges for light crane for lowering reinforcement cage.	hour	0.50	540.10	270.05
			d) Labour				
			Mate/Supervisor	day	0.16	314.67	50.35
			Mazdoor	day	4.00	300.36	1201.44
			e) Overhead charges @ 0.055 on (b+c+d)				2464.51
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4727.38
			Cost for 30 m = a+b+c+d+e				155738.96
			Rate per metre (a+b+c+d+e)/30				5191.30
						<i>say</i>	5191.00
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.				
12.28	1100 & 1700		Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification				
			Pile diameter - 1200 mm				
			<i>Unit = Running meter</i>				
			<i>Taking output = 20 metre</i>				
			a) Materials				
			PCC Grade M35	cum	22.61	4405.00	99597.05
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)				
			b) Materials Pile shoes				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			i) C.I. shoes for the pile	Kg	160.00	44.38	7100.80
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	43.00	3010.00
			iii) Steel helmet on top of casing head during driving	Kg	50.00	54.77	2738.50
			c) Machinery				
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	5023.08	30138.48
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	599.40	299.70
			d) Labour				
			Mate/Supervisor	day	0.18	314.67	56.64
			Mazdoor	day	4.50	300.36	1351.62
			e) Overhead charges @ 0.055 on (b+c+d)				2458.27
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4715.40
			Cost for 20 m = a+b+c+d+e				151466.46
			Rate per metre (a+b+c+d+e)/20				7573.32
						say	7573.00
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.				
12.29	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification				
			Pile Diameter = 500 mm				
			Unit = Running Meter				
			Taking output = 60 m				
			a) Materials				
			RCC Grade M35	cum	11.78	4299.00	50642.22
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)				
			b) Material Pile shoes				
			a) C.I Shoes	Kg	240.00	44.38	10651.20
			b) M.S. shoes	Kg	105.00	24.00	2520.00
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	54.77	1643.10
			c) Machinery				
			Crane 20 t capacity	hour	6.00	785.16	4710.96
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!
			d) Labour				
			Mate/Supervisor	day	0.12	314.67	37.76
			Mazdoor	day	3.00	300.36	901.08
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!
			Cost for 60 m = a+b+c+d+e+f				#VALUE!
			Rate per metre (a+b+c+d+e+f)/60				#VALUE!
						say	#VALUE!
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
12.30	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification				
			Pile Diameter = 750 mm				
			Unit = Running Meter				
			Taking output = 50 m				
			a) Materials				
			RCC Grade M35	cum	22.08	4299.00	94921.92
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)				
			b) Material Pile shoes				
			a) C.I. shoes	Kg	160.00	44.38	7100.80
			b) M.S. shoes	Kg	70.00	24.00	1680.00
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	40.00	54.77	2190.80
			c) Machinery				
			Crane 40 T capacity	hour	6.00	1000.00	6000.00
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!
			d) Labour				
			Mate/Supervisor	day	0.16	314.67	50.35
			Mazdoor	day	4.00	300.36	1201.44
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!
			Cost for 50 m = a+b+c+d+e+f				#VALUE!
			Rate per metre (a+b+c+d+e+f)/50				#VALUE!
						say	#VALUE!
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				
12.31	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification				
			Pile Diameter = 1000 mm				
			Unit = Running Meter				
			Taking output = 40 m				
			a) Materials				
			RCC Grade M35	cum	31.40	4299.00	134988.60
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)				
			b) Material Pile shoes				
			a) C.I. shoes for the pile	Kg	160.00	44.38	7100.80
			b) M.S. shoes @ 35 Kg per pile of 15 m	Kg	70.00	24.00	1680.00
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	50.00	54.77	2738.50
			c) Machinery				
			Crane 50 t capacity.	hour	6.00	1176.12	7056.72
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!
			d) Labour				
			Mate/Supervisor	day	0.20	314.67	62.93
			Mazdoor	day	5.00	300.36	1501.80
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Cost for 40 m = a+b+c+d+e+f				#VALUE!
			Rate per metre (a+b+c+d+e+f)/40				#VALUE!
						say	#VALUE!
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				
12.32	1100&1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification				
			Size of pile - 300 mm x 300 mm				
			Unit = Running Meter				
			Taking output = 60 m				
			a) Materials				
			RCC Grade M-35				
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)	cum	5.40	4299.00	23214.60
			b) Material Pile shoes				
			a) C I shoes	kg	240.00	44.38	10651.20
			b) M. S shoes	kg	105.00	24.00	2520.00
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	54.77	1643.10
			c) Machinery				
			Crane 10 tonne capacity	hour	6.00	627.48	3764.88
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!
			d) Labour				
			Mate/Supervisor	day	0.12	314.67	37.76
			Mazdoor	day	3.00	300.36	901.08
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!
			Cost for 60 m = a+b+c+d+e+f				#VALUE!
			Rate per metre (a+b+c+d+e+f)/60				#VALUE!
						say	#VALUE!
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				
12.33	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification				
			Size of pile - 500 mm x 500 mm				
			Unit = Running Meter				
			Taking output = 50 m				
			a) Materials				
			RCC Grade M-35				
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)	cum	12.50	4299.00	53737.50
			b) Material Pile shoes				
			a) C I shoes	kg	160.00	44.38	7100.80
			b) M. S shoes	kg	70.00	24.00	1680.00
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	54.77	1643.10
			c) Machinery				
			Crane 20 tonne capacity	hour	6.00	785.16	4710.96
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!
			d) Labour				
			Mate/Supervisor	day	0.16	314.67	50.35
			Mazdoor	day	4.00	300.36	1201.44

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!
			Cost for 50 m = a+b+c+d+e+f				#VALUE!
			Rate per metre (a+b+c+d+e+f)/50				#VALUE!
						say	#VALUE!
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				
12.34	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification				
			Size of pile - 750 mm x 750 mm				
			Unit = Running Meter				
			Taking output = 40 m				
			a) Materials				
			RCC Grade M-35				
			Rate for concrete may be adopted same as for bottom plug vide item no. 13.11(F) (IV)	cum	22.50	4299.00	96727.50
			b) Material				
			Pile shoes				
			a) C I shoes	kg	160.00	44.38	7100.80
			b) M. S shoes	kg	70.00	24.00	1680.00
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	54.77	1643.10
			c) Machinery				
			Crane 20 tonne capacity	hour	6.00	785.16	4710.96
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!
			d) Labour				
			Mate/Supervisor	day	0.18	314.67	56.64
			Mazdoor	day	4.50	300.36	1351.62
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!
			Cost for 40 m = a+b+c+d+e+f				#VALUE!
			Rate per metre (a+b+c+d+e+f)/40				#VALUE!
						say	#VALUE!
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.				
12.35	1100, 1900		Driven Vertical Steel Piles complete as per Drawing and & Technical Specification				
			Section of the pile - H Section steel column 400 x 250 mm (ISHB Series)				
			Unit = Running Meter				
			Taking output = 70 m				
			a) Materials				
			Structural steel including 5 per cent wastage @ 82.20 kg/m	tonnes	6.04	55000.00	332200.00
			b) Machinery				
			Crane 10 T capacity	hour	6.00	627.48	3764.88
			Vibrating Pile driving hammer complete with power unit and other accessories.	hour	6.00	Value	#VALUE!
			c) Labour				
			Mate/Supervisor	day	0.12	314.67	37.76
			Mazdoor	day	3.00	300.36	901.08

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Add 0.5 per cent of (a+b+c) for providing steel helmet on top of pile head during driving, stacking of piles at site, providing anti-corrosion treatment and other imponderables during installation.				#VALUE!
			d) Overhead charges @ 0.055 on (a+b+c)				#VALUE!
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!
			Cost for 70 m = a+b+c+d+e				#VALUE!
			Rate per metre (a+b+c+d+e)/70				#VALUE!
						say	#VALUE!
12.36	1100 & 1900		Driven Vertical Steel Piles complete as per Drawing and Technical Specification				
			Section of the pile - H Section steel column 450 x 250 mm (ISHB Series)				
			Unit = Running Meter				
			Taking output = 60 m				
			a) Materials				
			Structural steel including 5 per cent wastage @92.50 kg/m	tonnes	5.83	55000.00	320650.00
			b) Machinery				
			Crane 10 T capacity	hour	6.00	627.48	3764.88
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!
			c) Labour				
			Mate/Supervisor	day	0.14	314.67	44.05
			Mazdoor	day	3.50	300.36	1051.26
			Add 0.5 per cent of (a+b+c) for providing steel helmet and cushion block on top of pile head during driving, stacking of piles at site, providing anti-corrosive treatment and other imponderables during installation.				#VALUE!
			d) Overhead charges @ 0.055 on (a+b+c)				#VALUE!
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!
			Cost for 60 m = a+b+c+d+e				#VALUE!
			Rate per metre (a+b+c+d+e)/60				#VALUE!
						say	#VALUE!
12.37	1100		Pile Load Test on single Vertical Pile in accordance with IS:2911(Part-IV)				
			Unit = 1 MT				
			Taking output = 1 MT				
			a) Initial and routine load test	tonne	1.00	300.00	300.00
			b) Lateral load test	tonne	1.00	5000.00	5000.00
		Note	Although, this item is incidental to work and is not required to be included in BOQ of contract, the same is required to be added in the estimate to assess cost of work.				5300.00
12.38	1100, 1500 & 1700		Cement Concrete for Reinforced Concrete in Pile Cap complete as per Drawing and Technical Specification				
		A	RCC Grade M20				
			Unit = cum				
			Taking output = 15 cum				
		(i)	Using Concrete Mixer				
			a) Material				
			Cement	tonne	5.12	5000.00	25600.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.90	314.67	283.20
			Mason	day	1.50	414.80	622.20

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Mazdoor for concreting	day	20.00	300.36	6007.20
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator (capacity 33 KVA)	hour	6.00	342.36	2054.16
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2115.71
			d) Overhead charges @ 0.055 on (a+b+c)				3025.47
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5803.40
			Cost for 15 cum = a+b+c+d+e				63837.45
			Rate per metre (a+b+c+d+e)/15				4255.83
						say	4256.00
12.38A		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump				
			a) Material				
			Cement	tonne	5.12	5000.00	25600.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.16	314.67	50.35
			Mason	day	0.38	414.80	157.62
			Mazdoor for concreting	day	2.50	300.36	750.90
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	0.75	2400.00	1800.00
			Generator 100 KVA	hour	0.75	1925.00	1443.75
			Loader (capacity 1 cum)	hour	0.75	900.00	675.00
			Transit Mixer (capacity 4.0 cu.m)				
			Lead upto 1 Km	hour	2.00	854.55	1709.10
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	4.32	162.00
			Concrete Pump	hour	0.75	234.36	175.77
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1934.99
			d) Overhead charges @ 0.055 on (a+b+c)				2767.04
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5307.68
			Cost for 15 cum = a+b+c+d+e				58384.45
			Rate per metre (a+b+c+d+e)/15				3892.30
						say	3892.00
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.				
12.38		B	RCC Grade M25				
			Unit = cum				
			Taking output = 15 cum				
		(i)	Using Concrete Mixer				
			a) Material				
			Cement	tonne	5.99	5000.00	29950.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.90	314.67	283.20
			Mason	day	1.50	414.80	622.20
			Mazdoor for concreting	day	20.00	300.36	6007.20
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36
			c) Machinery				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator (capacity 33 KVA)	hour	6.00	342.36	2054.16
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2289.71
			d) Overhead charges @ 0.055 on (a+b+c)				3274.29
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6280.69
			Cost for 15 cum = a+b+c+d+e				69087.55
			Rate per metre (a+b+c+d+e)/15				4605.84
						say	4606.00
12.38B		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump				
			a) Material				
			Cement	tonne	5.99	5000.00	29950.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.16	314.67	50.35
			Mason	day	0.38	414.80	157.62
			Mazdoor for concreting	day	2.50	300.36	750.90
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	0.75	2400.00	1800.00
			Generator 125 KVA	hour	0.75	2640.00	1980.00
			Loader (capacity 1 cum)	hour	0.75	900.00	675.00
			Transit Mixer (capacity 4.0 cu.m)				
			Lead upto 1 Km	hour	2.00	854.55	1709.10
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	4.32	162.00
			Concrete Pump	hour	0.75	234.36	175.77
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2130.44
			d) Overhead charges @ 0.055 on (a+b+c)				3046.53
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5843.80
			Cost for 15 cum = a+b+c+d+e				64281.76
			Rate per metre (a+b+c+d+e)/15				4285.45
						say	4285.00
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.				
12.38		C	RCC Grade M30				
			Unit = cum				
			Taking output = 15 cum				
		(i)	Using Concrete Mixer				
			a) Material				
			Cement	tonne	6.10	5000.00	30500.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.90	314.67	283.20
			Mason	day	1.50	414.80	622.20
			Mazdoor for concreting	day	20.00	300.36	6007.20
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator (capacity 33 KVA)	hour	6.00	342.36	2054.16
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2311.71

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			d) Overhead charges @ 0.055 on (a+b+c)				3305.75
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6341.03
			Cost for 15 cum = a+b+c+d+e				69751.35
			Rate per metre (a+b+c+d+e)/15				4650.09
						say	4650.00
'12.38C		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump				
			a) Material				
			Cement	tonne	6.10	5000.00	30500.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.16	314.67	50.35
			Mason	day	0.38	414.80	157.62
			Mazdoor for concreting	day	2.50	300.36	750.90
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	0.75	2400.00	1800.00
			Generator 100 KVA	hour	0.75	1925.00	1443.75
			Loader (capacity 1 cum)	hour	0.75	900.00	675.00
			Transit Mixer (capacity 4.0 cu.m)				
			Lead upto 1 Km	hour	2.00	854.55	1709.10
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	4.32	162.00
			Concrete Pump	hour	0.75	234.36	175.77
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2130.99
			d) Overhead charges @ 0.055 on (a+b+c)				3047.32
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5845.31
			Cost for 15 cum = a+b+c+d+e				64298.36
			Rate per metre (a+b+c+d+e)/15				4286.56
						say	4287.00
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.				
12.38		D	RCC Grade M35				
			Unit = cum				
			Taking output = 15 cum				
		(i)	Using Concrete Mixer				
			a) Material				
			Cement	tonne	6.33	5000.00	31650.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.90	314.67	283.20
			Mason	day	1.50	414.80	622.20
			Mazdoor	day	20.00	300.36	6007.20
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator (capacity 33 KVA)	hour	6.00	342.36	2054.16
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2357.71
			d) Overhead charges @ 0.055 on (a+b+c)				3371.53
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6467.21
			Cost for 15 cum = a+b+c+d+e				71139.31
			Rate per metre (a+b+c+d+e)/15				4742.62

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
						<i>say</i>	4743.00
12.38D		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump				
			a) Material				
			Cement	tonne	6.33	5000.00	31650.00
			Coarse sand	cum	6.75	252.20	1702.35
			20 mm Aggregate	cum	8.10	1110.00	8991.00
			10 mm Aggregate	cum	5.40	899.36	4856.54
			b) Labour				
			Mate	day	0.16	314.67	50.35
			Mason	day	0.38	414.80	157.62
			Mazdoor for concreting	day	2.50	300.36	750.90
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36
			c) Machinery				
			Batching Plant @ 20 cum/hour	hour	0.75	2400.00	1800.00
			Generator 125 KVA	hour	0.75	2640.00	1980.00
			Loader (capacity 1 cum)	hour	0.75	900.00	675.00
			Transit Mixer (capacity 4.0 cu.m)				
			Lead upto 1 Km	hour	2.00	854.55	1709.10
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	4.32	162.00
			Concrete Pump	hour	0.75	234.36	175.77
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2198.44
			d) Overhead charges @ 0.055 on (a+b+c)				3143.77
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6030.32
			Cost for 15 cum = a+b+c+d+e				66333.52
			Rate per metre (a+b+c+d+e)/15				4422.23
						<i>say</i>	4422.00
12.39	1100&1700		Levelling Course for Pile cap				
			Providing and laying of PCC M15 levelling course 100mm thick below the pile cap.				
			<i>Unit = cum</i>				
			<i>Taking output = 15 cum</i>				
			a) Material				
			Cement	tonne	4.13	5000.00	20650.00
			Coarse sand	cum	6.75	252.20	1702.35
			40 mm aggregate	cum	8.10	999.65	8097.17
			20 mm Aggregate	cum	4.05	1110.00	4495.50
			10 mm Aggregate	cum	1.35	899.36	1214.14
			b) Labour				
			Mate	day	0.86	314.67	270.62
			Mason	day	1.50	414.80	622.20
			Mazdoor	day	20.00	300.36	6007.20
			c) Machinery				
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84
			Generator 33 KVA	hour	6.00	342.36	2054.16
			d) Overhead charges @ 0.055 on (a+b+c)				2617.40
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5020.66
			Cost for 15 cum = a+b+c+d+e				55227.23
			Rate per metre (a+b+c+d+e)/15				3681.82
						<i>say</i>	3682.00
12.40	1600		Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.				
			<i>Unit = 1 MT</i>				
			<i>Taking output = 1 MT</i>				
			a) Material				

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs
			HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	55375.00	58143.75
			Binding wire	Kg	6.00	62.00	372.00
			b) Labour for cutting, bending, shifting to site, tying and placing in position				
			Mate	day	0.40	314.67	125.87
			Blacksmith	day	2.00	479.16	958.32
			Mazdoor	day	6.00	300.36	1802.16
			c) Overhead charges @ 0.055 on (a+b)				3377.12
			d) Contractor's profit @ 0.1 on (a+b+c)				6477.92
			Rate per MT (a+b+c+d)				71257.13
						say	71257.00
12.41	1600		Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification				
			Unit = 1 MT				
			Taking output = 1 MT				
			a) Material				
			MS bars including 5 per cent overlaps and wastage	tonne	1.05	44000.00	46200.00
			Binding wire	Kg	6.00	62.00	372.00
			b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position				
			Mate	day	0.43	314.67	135.31
			Blacksmith	day	2.25	479.16	1078.11
			Mazdoor	day	6.50	300.36	1952.34
			c) Overhead charges @ 0.055 on (a+b)				2735.58
			d) Contractor's profit @ 0.1 on (a+b+c)				5247.33
			Rate for per MT (a+b+c+d)				57720.67
						say	57721.00

CHAPTER-12
FOUNDATIONS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.1	304		Excavation for Structures					
			Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.					
		I	Ordinary soil					
			Unit = cum					
			Taking output = 10 cum					
		A	Manual Means					
		(i)	Depth upto 3 m					
		a)	Labour					
			Mate	day	0.14	314.67	44.05	L-12
			Mazdoor	day	3.50	300.36	1051.26	L-13
		b)	Overhead charges @ 0.055 on (a)				60.24	
		c)	Contractor's profit @ 0.1 on (a+b)				115.56	
			Cost for 10 cum = a+b+c				1271.11	
			Rate per cum = (a+b+c)/10				127.11	
						say	127.00	
		Note	1. Cost of dewatering may be added where required upto, 10 percent of labour cost assessment for dewatering shall be made as per site conditions.					
			2. The excavated earth can be used partially for backfilling of foundation pit and partly for road work except for marshy soil. Hence cost of disposal has not been added except for marshy soil. This remark is common to all cases of item 12.1 excluding marshy soil.					
			3. The cost of shoring and shuttering, where needed, may be added @ 1 per cent on cost of excavation for open foundation.					
12.1 (I) A		(ii)	Depth 3 m to 6 m					
		a)	Labour					
			Mate/Supervisor	day	0.18	314.67	56.64	L-12
			Mazdoor	day	4.50	300.36	1351.62	L-13
		b)	Overhead charges @ 0.055 on (a)				77.45	
		c)	Contractor's profit @ 0.1 on (a+b)				148.57	
			Cost for 10 cum = a+b+c				1634.29	
			Rate per cum = (a+b+c)/10				163.43	
						say	163.00	
		Note	Cost of dewatering may be added where required upto 15 per cent of labour cost. Assessment for dewatering shall be done as per actual ground conditions.					
12.1 (I) A		(iii)	Depth above 6 m					
		a)	Labour					
			Mate/Supervisor	day	0.24	314.67	75.52	L-12
			Mazdoor	day	6.00	300.36	1802.16	L-13
		b)	Overhead charges @ 0.055 on (a)				103.27	
		c)	Contractor's profit @ 0.1 on (a+b)				198.10	
			Cost for 10 cum = a+b+c				2179.05	
			Rate per cum = (a+b+c)/10				217.90	
						say	218.00	
		Note	1. Cost of dewatering may be added where required upto 20 per cent of labour cost. Assessment for dewatering shall be made as per site conditions.					
12.1 (I)		B	Mechanical Means					
		(i)	Depth upto 3 m					
			Unit = cum					
			Taking output = 240 cum					
		a)	Labour					
			Mate	day	0.32	314.67	100.69	L-12
			Mazdoor	day	8.00	300.36	2402.88	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1000.00	6000.00	P&M-49

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) Overhead charges @ 0.055 on (a+b)				467.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				897.13	
			Cost for 240 cum = a+b+c+d				9868.40	
			Rate per cum = (a+b+c+d)/240				41.12	
						say	41.00	
		Note	Cost of dewatering upto 5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
12.1 (I) B		(ii)	Depth 3 m to 6 m					
			Unit = cum					
			Taking output = 210 cum					
		a)	Labour					
			Mate	day	0.32	314.67	100.69	L-12
			Mazdoor	day	8.00	300.36	2402.88	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1000.00	6000.00	P&M-49
			c) Overhead charges @ 0.055 on (a+b)				467.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				897.13	
			Cost for 210 cum = a+b+c+d				9868.40	
			Rate per cum = (a+b+c+d)/210				46.99	
						say	47.00	
		Note	Cost of dewatering upto 7.5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
12.1 (I) B		(iii)	Depth above 6m					
			Unit = cum					
			Taking output = 180 cum					
		a)	Labour					
			Mate	day	0.40	314.67	125.87	L-12
			Mazdoor	day	10.00	300.36	3003.60	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1000.00	6000.00	P&M-49
			c) Overhead charges @ 0.055 on (a+b)				502.12	
			d) Contractor's profit @ 0.1 on (a+b+c)				963.16	
			Cost for 180 cum = a+b+c+d				10594.75	
			Rate per cum = (a+b+c+d)/180				58.86	
						say	59.00	
		Note	1. Cost of dewatering upto 10 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions.					
			2. Labour provided for excavation by mechanical means includes that required for trimming of bottom and side slopes.					
12.1		II	Ordinary Rock (not requiring blasting)					
		A	Manual Means					
		(i)	Depth upto 3 m					
			Unit = cum					
			Taking output = 10 cum					
		a)	Labour					
			Mate	day	0.20	314.67	62.93	L-12
			Mazdoor	day	5.00	300.36	1501.80	L-13
			b) Overhead charges @ 0.055 on (a)				86.06	
			c) Contractor's profit @ 0.1 on (a+b)				165.08	
			Cost for 10 cum = a+b+c				1815.87	
			Rate per cum = (a+b+c)/10				181.59	
						say	182.00	
		Note	Cost of dewatering upto 10 per cent of labour cost may be added, where required. Assessment for dewatering shall be made as per site conditions.					
12.1(II)		B	Mechanical Means					
			Unit = cum					
			Taking output = 180 cum					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.24	314.67	75.52	L-12
			Mazdoor	day	6.00	300.36	1802.16	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1000.00	6000.00	P&M-49
			c) Overhead charges @ 0.055 on (a+b)				433.27	
			d) Contractor's profit @ 0.1 on (a+b+c)				831.10	
			Cost for 180 cum = a+b+c+d				9142.05	
			Rate per cum = (a+b+c+d)/180				50.79	
						say	51.00	
		Note	1. Cost of dewatering upto 10 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2. In case of rock, foundation beyond 3 m is not dug and hence not included.					
12.1		III	Hard Rock (requiring blasting)					
		A	Manual Means					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.35	314.67	110.13	L-12
			Driller	day	0.50	314.67	157.34	L-06
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	8.00	300.36	2402.88	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.00	293.76	293.76	P&M-032
			c) Material					
			Blasting Material	kg	3.50	120.72	422.52	M-059
			Detonator electric	each	14.00	5.75	80.44	M-058/100
			d) Overhead charges @ 0.055 on (a+b+c)				196.39	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				376.72	
			Cost for 10 cum = a+b+c+d+e				4143.88	
			Rate per cum = (a+b+c+d+e)/10				414.39	
						say	414.00	
		Note	Cost of dewatering @ 10 percent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions.					
12.1		IV	Hard Rock (blasting prohibited)					
			Unit = cum					
			Taking output = 10 cum					
		A	Mechanical Means					
			a) Labour					
			Mate	day	0.20	314.67	62.93	L-12
			Mazdoor	day	5.00	300.36	1501.80	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.00	293.76	1762.56	P&M-032
			c) Overhead charges @ 0.055 on (a+b)				183.00	
			d) Contractor's profit @ 0.1 on (a+b+c)				351.03	
			Cost for 10 cum = a+b+c+d				3861.32	
			Rate per cum = (a+b+c+d)/10				386.13	
						say	386.00	
		Note	1. Cost of dewatering upto 10 per cent of (a+b), may be added, where required. Assessment for dewatering shall be made as per site conditions.					
			2. In case of rock, foundation beyond 3 m is not dug and hence not included.					
12.1		V	Marshy Soil					
			Unit = cum					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Taking output = 10 cum					
			Depth upto 3 m					
		A	Manual means					
			a) Labour					
			Mate/Supervisor	day	0.40	314.67	125.87	L-12
			Mazdoor	day	10.00	300.36	3003.60	L-13
			b) Machinery					
			Tractor-trolley for removal.	hour	2.67	168.75	450.56	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				196.90	
			d) Contractor's profit @ 0.1 on (a+b+c)				377.69	
			Cost for 10 cum = a+b+c+d				4154.63	
			Rate per cum = (a+b+c+d)/ 10				415.46	
						say	415.00	
		Note	1. Cost of dewatering @ 30 per cent of (a), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2. Shoring & strutting 15 per cent of (a), where required may be added					
			3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item 12.1-IA (ii) to (iii) for ordinary soil					
12.1 (V)		B	Mechanical Means					
			a) Labour					
			Mate	day	0.08	314.67	25.17	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	2.00	300.36	600.72	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.17	1000.00	170.00	P&M-49
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.45	1010.00	454.50	P&M-13
			c) Overhead charges @ 0.055 on (a+b)				68.77	
			d) Contractor's profit @ 0.1 on (a+b+c)				131.92	
			Cost for 10 cum = a+b+c+d				1451.08	
			Rate per cum = (a+b+c+d)/10				145.11	
						say	145.00	
		Note	1. Cost of dewatering @ 20 percent of (a+b) may be added, where required					
			2. Shoring & strutting @ 10 percent of (a+b), where required may be added					
			3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item 12.1-IB (ii) to (iii) for ordinary soil					
		VI	Back Filling in Marshy Foundation Pits					
			Unit : Cum					
			Taking Output : 6 cum					
			a) Labour					
			Mate	day	0.12	314.67	37.76	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	3.00	300.36	901.08	L-13
			b) Machinery					
			Tractor-trolley for transportation	hour	2.00	168.75	337.50	P&M-72
			c) Overhead charges @ 0.055 on (a+b)				70.20	
			d) Contractor's profit @ 0.1 on (a+b+c)				134.65	
			Cost for 6 cum = a+b+c+d				1481.19	
			Rate per cum = (a+b+c+d)/6				246.87	
						say	247.00	
12.2	304		Filling Annular Space Around Footing in Rock					
			Unit = cum					
			Taking out put = 1 cum					
			Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per item 12.4.				VALUE	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.3	304		Sand Filling in Foundation Trenches as per Drawing & Technical Specification					
			Unit = cum					
			Taking output = 1 cum					
			a) Labour					
			Mate	day	0.01	314.67	3.15	L-12
			Mazdoor	day	0.30	300.36	90.11	L-13
			b) Material					
			Sand (assuming 20 per cent voids)	cum	1.20	252.20	302.64	M-002
			c) Overhead charges @ 0.055 on (a+b)				21.77	
			d) Contractor's profit @ 0.1 on (a+b+c)				41.77	
			Rate per cum = a+b+c+d				459.44	
						say	459.00	
12.4	2100		PCC 1:3:6 in Foundation					
			Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.					
			Unit = cum					
			Taking output = 15 cum					
			a) Labour					
			Mate	day	0.64	314.67	201.39	L-12
			Mason	day	1.00	479.16	479.16	L-11
			Mazdoor	day	15.00	300.36	4505.40	L-13
			b) Material					
			40 mm Aggregate	cum	13.50	999.65	13495.28	M-042
			coarse Sand	cum	6.75	252.20	1702.35	M-001
			cement	tonne	3.45	5000.00	17250.00	M-015
			Cost of water	KL	18.00	0.00	0.00	M-1629
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Water tanker 6 KL capacity	hour	2.00	111.24	222.48	P&M-17
			d) Overhead charges @ 0.055 on (a+b+c)				2331.23	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4471.73	
			Cost for 15 cum = a+b+c+d+e				49189.02	
			Rate per cum = (a+b+c+d+e)/15				3279.27	
						say	3279.00	
		Note	Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.					
12.5	1300		Brick Masonry Work in Cement Mortar 1:3 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.					
			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks 1st class	each	2500.00	7.00	17500.00	M-014
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.20	3098.00	3717.60	Item 12.6 (A)
			b) Labour					
			Mate	day	0.48	314.67	151.04	L-12
			Mason	day	4.00	479.16	1916.64	L-11
			Mazdoor	day	8.00	300.36	2402.88	L-13
			c) Overhead charges @ 0.055 on (a+b)				1412.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				2710.10	
			Cost for 5 cum = a+b+c+d				29811.11	
			Rate per cum (a+b+c+d)/5				5962.22	
						say	5962.00	
		(i)	Rate for Brick Work in C. M. 1:2 in foundation				6179.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(ii)	Rate for Brick Work in C. M. 1:3 in foundation				5962.00	
		(iii)	Rate for Brick Work in C. M. 1:4 in foundation				5814.00	
		(iv)	Rate for Brick Work in C. M. 1:6 in foundation				5673.00	
12.6	Sub-analysis	(A)	Cement Mortar 1:3 (1 cement : 3 sand)					
			Unit = 1 cum					
			Taking output = 1 cum					
		a)	Materials					
			Cement	tonne	0.51	5000.00	2550.00	M-015
			Sand	cum	1.05	252.20	264.81	M-001
		b)	Labour					
			Mate	day	0.04	314.67	12.59	L-12
			Mazdoor	day	0.90	300.36	270.32	L-13
			Total Material and Labour = (a+b)			say	3098.00	
	Sub-analysis (Addl.)	(B)	Cement Mortar 1:2 (1 cement : 2 sand)					
			Unit = 1 cum					
			Taking output = 1 cum					
		a)	Materials					
			Cement	tonne	0.672	5000.00	3360.00	M-015
			Sand	cum	0.933	252.20	235.39	M-001
		b)	Labour					
			Mate	day	0.04	314.67	12.59	L-12
			Mazdoor	day	0.90	300.36	270.32	L-13
			Total Material and Labour = (a+b)			say	3878.00	
	Sub-analysis (Addl.)	(C)	Cement Mortar 1:4 (1 cement : 4 sand)					
			Unit = 1 cum					
			Taking output = 1 cum					
		a)	Materials					
			Cement	tonne	0.40	5000.00	2000.00	M-015
			Sand	cum	1.12	252.20	282.46	M-001
		b)	Labour					
			Mate	day	0.04	314.67	12.59	L-12
			Mazdoor	day	0.90	300.36	270.32	L-13
			Total Material and Labour = (a+b)			say	2565.00	
	Sub-analysis (Addl.)	(D)	Cement Mortar 1:6 (1 cement : 6 sand)					
			Unit = 1 cum					
			Taking output = 1 cum					
		a)	Materials					
			Cement	tonne	0.288	5000.00	1440.00	M-015
			Sand	cum	1.337	252.20	337.23	M-001
		b)	Labour					
			Mate	day	0.04	314.67	12.59	L-12
			Mazdoor	day	0.90	300.36	270.32	L-13
			Total Material and Labour = (a+b)			say	2060.00	
12.7	1400		Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications.					
			Unit = cum					
			Taking output = 5 cum					
	1405.4	(A)	Square Rubble Coursed Rubble Masonry (first sort)					
		a)	Material					
			Stone	cum	5.50	340.54	1872.97	M-074
			Through and bond stone	each	35.00	7.00	245.00	M-180
			(35no.x0.24mx0.24mx0.39m = 0.79 cu.m)					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.50	3098.00	4647.00	Item 12.6 (A)
			b) Labour					
			Mate	day	0.66	314.67	207.68	L-12
			Mason	day	7.50	479.16	3593.70	L-11
			Mazdoor	day	9.00	300.36	2703.24	L-13
			c) Overhead charges @ 0.055 on (a+b)				729.83	
			d) Contractor's profit @ 0.1 on (a+b+c)				1399.94	
			Cost for 5 cum = a+b+c+d				15399.36	
			Rate per cum (a+b+c+d)/5				3079.87	
						say	3080.00	
	1405.3	(B)	Random Rubble Masonry					
			(coursed/uncoursed)					
			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Stone	cum	5.50	340.55	1873.03	M-067
			Through and bond stone	each	35.00	7.00	245.00	M-180
			(35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.55	3098.00	4801.90	Item 12.6 (A)
			b) Labour					
			Mate	day	0.62	314.67	195.10	L-12
			Mason	day	6.00	479.16	2874.96	L-11
			Mazdoor	day	9.00	300.36	2703.24	L-13
			c) Overhead charges @ 0.055 on (a+b)				698.13	
			d) Contractor's profit @ 0.1 on (a+b+c)				1339.13	
			Cost for 5 cum = a+b+c+d				14730.48	
			Rate per cum (a+b+c+d)/5				2946.10	
						say	2946.00	
		Note	The labour already considered in cement mortar has been taken into account while proposing labour for masonry works.					
12.8	1500, 1700 & 2100		Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.					
		A	PCC Grade M15					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	4.13	5000.00	20650.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm Aggregate	cum	8.10	999.65	8097.17	M-042
			20 mm Aggregate	cum	4.05	1110.00	4495.50	M-041
			10 mm Aggregate	cum	1.35	899.36	1214.14	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 63 KVA	hour	6.00	361.80	2170.80	P&M-94(iii)
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3187.00			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				1912.09	
			e) Overhead charges @ 0.055 on (a+b+c+d)				2734.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				5244.87	
			Cost for 15 cum = a+b+c+d+e+f				57693.61	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e+f)/15				3846.24	
						say	3846.00	
		Note	Needle Vibrator is an item of minor T & P which is already included in overhead charges. Hence not added in rate analysis of cement concrete works.					
12.8		B	PCC Grade M20					
			Unit : cum					
			Taking output = 15 cum					
		a)	Material					
			Cement	tonne	5.16	5000.00	25800.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm Aggregate	cum	5.40	999.65	5398.11	M-042
			20 mm Aggregate	cum	5.40	1110.00	5994.00	M-041
			10 mm Aggregate	cum	2.70	899.36	2428.27	M-039
		b)	Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3524.00			
		d)	Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				2113.97	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3022.98	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				5798.62	
			Cost for 15 cum = a+b+c+d+e+f				63784.86	
			Rate per cum = (a+b+c+d+e+f)/15				4252.32	
						say	4252.00	
12.8		C	RCC Grade M20					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
		a)	Material					
			Cement	tonne	5.21	5000.00	26050.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
		b)	Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3542.00			
		d)	Formwork @ 4 per cent on (a+b+c)				2125.06	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3038.83	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				5829.03	
			Cost for 15 cum = a+b+c+d+e+f				64119.38	
			Rate per cum = (a+b+c+d+e+f)/15				4274.63	
						say	4275.00	
12.8 C		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Unit : cum					
			Taking Output = 120 cum					
		a)	Material					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cement	tonne	41.66	5000.00	208300.00	M-015
			Coarse Sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 km, L-lead in km	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3223.00			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				15467.11	
			e) Overhead charges @ 0.055 on (a+b+c+d)				22117.97	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				42426.29	
			Cost for 120 cum = a+b+c+d+e+f				466689.22	
			Rate per cum = (a+b+c+d+e+f)/120				3889.08	
						say	3889.00	
12.8		D	PCC Grade M25					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.99	5000.00	29950.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm Aggregate	cum	5.40	999.65	5398.11	M-042
			20 mm Aggregate	cum	5.40	1110.00	5994.00	M-041
			10 mm Aggregate	cum	2.70	899.36	2428.27	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3800.00			
			d) Formwork @ 3.75 per cent of (a+b+c)				2137.47	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3252.52	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6238.93	
			Cost for 15 cum = a+b+c+d+e+f				68628.21	
			Rate per cum = (a+b+c+d+e+f)/15				4575.21	
						say	4575.00	
12.8 D		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	47.95	5000.00	239750.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			40 mm Aggregate	cum	43.20	999.65	43184.88	M-042
			20 mm Aggregate	cum	43.20	1110.00	47952.00	M-041
			10 mm Aggregate	cum	21.60	899.36	19426.18	M-039

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3483.00			
			d) Formwork @ 3.75 per cent of cost of concrete i.e. cost of material, labour and machinery				15671.65	
			e) Overhead charges @ 0.055 on (a+b+c+d)				23847.02	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				45742.92	
			cost of 120 cum = a+b+c+d+e+f				503172.14	
			Rate per cum = (a+b+c+d+e+f)/120				4193.10	
						say	4193.00	
12.8		E	RCC Grade M25					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.05	5000.00	30250.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3822.00			
			d) Formwork @ 3.75 per cent of a+b+c.				2149.74	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3271.19	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6274.74	
			cost of 15 cum = a+b+c+d+e+f				69022.12	
			Rate per cum (a+b+c+d+e+f)/15				4601.47	
						say	4601.00	
12.8 E		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Unit: cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	48.38	5000.00	241900.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity 1 cum	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3503.00			
			d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				15760.42	
			e) Overhead charges @ 0.055 on (a+b+c+d)				23982.10	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				46002.04	
			cost of 120 cum = a+b+c+d+e+f				506022.41	
			Rate per cum (a+b+c+d+e+f)/120				4216.85	
						say	4217.00	
12.8		F	PCC Grade M30					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.08	5000.00	30400.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm Aggregate	cum	5.40	999.65	5398.11	M-042
			20 mm Aggregate	cum	5.40	1110.00	5994.00	M-041
			10 mm Aggregate	cum	2.70	899.36	2428.27	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3830.00			
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				2010.73	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3270.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6273.03	
			cost of 15 cum = a+b+c+d+e+f				69003.35	
			Rate per cum (a+b+c+d+e+f)/15				4600.22	
						say	4600.00	
12.8 F		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	48.60	5000.00	243000.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			40 mm Aggregate	cum	43.20	999.65	43184.88	M-042
			20 mm Aggregate	cum	43.20	1110.00	47952.00	M-041
			10 mm Aggregate	cum	21.60	899.36	19426.18	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3510.00			
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				14740.62	
			e) Overhead charges @ 0.055 on (a+b+c+d)				23974.56	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				45987.57	
			cost of 120 cum = a+b+c+d+e+f				505863.31	
			Rate per cum (a+b+c+d+e+f)/120				4215.53	
						say	4216.00	
12.8		G	RCC Grade M30					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.10	5000.00	30500.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3839.00			
			d) Formwork @ 3.5 per cent on cost of concrete i.e. cost of material, labour and machinery				2015.18	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3277.54	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6286.92	
			cost of 15 cum = a+b+c+d+e+f				69156.08	
			Rate per cum = (a+b+c+d+e+f)/15				4610.41	
						say	4610.00	
12.8 G		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.80	5000.00	244000.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3520.00			
			d) Formwork @ 3.5 per cent of cost of concrete i.e. cost of material, labour and machinery				14783.22	
			e) Overhead charges @ 0.055 on (a+b+c+d)				24043.86	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				46120.49	
			cost of 120 cum = a+b+c+d+e+f				507325.42	
			Rate per cum (a+b+c+d+e+f)/120				4227.71	
						say	4228.00	
12.8		H	RCC Grade M35					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.33	5000.00	31650.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3916.00			
			d) Formwork @ 3 per cent on a+b+c				1761.79	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3326.85	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6381.51	
			cost of 15 cum = a+b+c+d+e+f				70196.61	
			Rate per cum = (a+b+c+d+e+f)/15				4679.77	
						say	4680.00	
12.8 H		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit ; cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	50.64	5000.00	253200.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3597.00			
			d) Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				12947.34	
			e) Overhead charges @ 0.055 on (a+b+c+d)				24448.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				46897.41	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			cost of 120 cum = a+b+c+d+e+f				515871.47	
			Rate per cum = (a+b+c+d+e+f)/120				4298.93	
						say	4299.00	
		Note:	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
			WELL FOUNDATION					
12.9	1200		Providing and Constructing Temporary Island 16 m diameter for Construction of Well Foundation for 8m dia. Well.					
		A	Assuming depth of water 1.0 m and height of island to be 1.25 m including Royalty for earth @ Rs. 3768.00 for each Island.					
			Unit = 1 No					
			Taking output = 1 No.					
			a) Material					
			Earth (compacted)	cum	251.20	28.6	7179.30	M-056
			Sand bags	each	750.00	3.45	2587.50	M-070
			b) Labour					
			Mate	day	0.40	314.67	125.87	L-12
			Mazdoor for filling sand bags, stitching and placing	day	15.00	300.36	4505.40	L-13
			c) Machinery					
			Crane with grab 1 cum capacity	hour	20.00	784.62	15692.40	P&M-40
			Consumables @ 2.5 per cent of (c) above				392.31	
			d) Overhead charges @ 0.055 on (a+b+c)				1676.55	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3215.93	
			Rate per No. (a+b+c+d+e)				35375.26	
						say	35375.00	
		Note	It is assumed that earth will be available within the working space of crane with grab bucket.					
12.9		B	Assuming depth of water 4.0 m and height of island 4.5 m including Royalty for earth @ Rs. 13565.00 for each Island.					
			Unit = 1No					
			Taking output = 1 No					
			a) Material					
			Earth (compacted)	cum	904.32	28.58	25845.47	M-056
			Sand bags	each	6000.00	3.45	20700.00	M-070
			Wooden ballies 8" Dia and 9 m long	each	95.00	40.00	3800.00	M-189
			Wooden ballies 2" Dia for bracing	metre	190.00	17.50	3325.00	M-188
			b) Labour					
			Mate	day	5.60	314.67	1762.15	L-12
			Mazdoor for piling 8" dia ballies for piling 8" dia ballies	day	18.00	300.36	5406.48	L-13
			Mazdoor for bracing with 2" dia ballies	day	12.00	300.36	3604.32	L-13
			Mazdoor for filling sand bags, stitching and placing	day	110.00	300.36	33039.60	L-13
			c) Machinery					
			Crane with grab 1 cum capacity	hour	50.00	784.62	39231.00	P&M-40
			Consumables and other arrangements for piling ballies @ 2.5 per cent of (a+b+c).				3417.85	
			d) Overhead charges @ 0.055 on (a+b+c)				7707.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				14783.91	
			Rate per No. (a+b+c+d+e)				162623.03	
						say	162623.00	
		Note	For other well diameters rate can be worked out on the basis of cross-sectional area of well. The diameter of the island shall be in the conformity with clause 1203.2 of MoRTH specifications.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.9	C		Providing and constructing one span service road to reach island location from one pier location to another pier location including Royalty for earth @ Rs. 225.00 per m for service Road.					
			Assuming span length 30 m, width of service road 10m and depth of water 1m					
			Unit = 1 meter					
			Taking output = 30 metre					
			a) Material					
			Earth	cum	450.00	28.58	12861.00	M-056
			Sand bags	each	300.00	3.45	1035.00	M-070
			b) Labour					
			Mate	day	0.24	314.67	75.52	L-12
			Mazdoor for filling sand bags, stitching and placing	day	6.00	300.36	1802.16	L-13
			c) Machinery					
			Front end Loader 1 cum capacity	hour	27.00	900.00	24300.00	P&M-06
			Tipper 5.5 cum capacity	hour	28.00	1010.00	28280.00	P&M-13
			d) Overhead charges @ 0.055 on (a+b+c)				3759.45	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				7211.31	
			Cost for 30 m (a+b+c+d+e)				79324.45	
			Rate per m (a+b+c+d+e)/30				2644.15	
						say	2644.00	
12.10	1200 & 1900		Providing and Laying Cutting Edge of Mild Steel weighing 40 kg per metre for Well Foundation complete as per Drawing and Technical Specification.					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			Structural steel in plates, angles, etc including 5 per cent wastage	tonne	1.05	55000.00	57750.00	M-178
			Nuts & bolts	Kg	20.00	48.00	960.00	M-063
			b) Labour					
			(for cutting, bending, making holes, joining, welding and erecting in position)					
			Mate	day	1.32	314.67	415.36	L-12
			Fitter	day	5.50	414.80	2281.40	L-08
			Blacksmith	day	5.50	479.16	2635.38	L-02
			Welder	day	5.50	479.16	2635.38	L-02
			Mazdoor	day	16.50	300.36	4955.94	L-13
			Electrodes, cutting gas and other consumables @ 10 per cent of cost of (a) above				5871.00	
			c) Overhead charges @ 0.055 on (a+b)				4262.75	
			d) Contractor's profit @ 0.1 on (a+b+c)				8176.72	
			Rate per MT (a+b+c+d)				89943.93	
						say	89944.00	
12.11	1200, 1500 & 1700		Plain/Reinforced Cement Concrete, in Well Foundation complete as per Drawing and Technical Specification.					
			Unit = 1 cum					
			Taking output = 1 cum					
		A	Well curb					
		(i)	RCC M20 Grade					
			Same as for 12.8 (C) except for formwork which shall be @ 20 per cent of the cost of concrete instead of 4 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3542.00	Item 12.8 (C)
			d) formwork @ 20 per cent of the cost of concrete				708.40	
			e) Overhead charges @ 0.055 on (a+b+c+d)				233.77	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				448.42	
			Rate perm (a+b+c+d+e+f)				4932.59	
						say	4933.00	
12.11 A (i)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3222.00	Item 12.8 (C)
			d) formwork @ 20 per cent of the cost of concrete				644.40	
			e) Overhead charges @ 0.055 on (a+b+c+d)				212.65	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				407.91	
			Rate perm (a+b+c+d+e+f)				4486.96	
						say	4487.00	
12.11 A		(ii)	RCC M25 Grade					
			Same as for 12.8 (E) except for formwork which shall be @ 20 per cent of the cost of concrete instead of 3.75 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3822.00	Item 12.8 (E)
			d) formwork @ 20 per cent of the cost of concrete				764.40	
			e) Overhead charges @ 0.055 on (a+b+c+d)				252.25	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				483.87	
			Rate perm (a+b+c+d+e+f)				5322.52	
						say	5323.00	
12.11 A (ii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3503.00	Item 12.8 (E)
			d) formwork @ 20 per cent of the cost of concrete				700.60	DIR used item
			e) Overhead charges @ 0.055 on (a+b+c+d)				231.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				443.48	
			Rate perm (a+b+c+d+e+f)				4878.28	
						say	4878.00	
12.11 A		(iii)	RCC M35 Grade					
			Same as for 12.8 (H) except for formwork which shall be @ 20 per cent of the cost of concrete instead of 3.0 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3916.00	Item 12.8 (H) Case I
			d) formwork @ 20 per cent of the cost of concrete				783.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				258.46	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				495.77	
			Rate perm (a+b+c+d+e+f)				5453.42	
						say	5453.00	
12.11 A (iii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3658.00	Item 12.8 (H)
			d) formwork @ 20 per cent of the cost of concrete				731.60	DIR used item
			e) Overhead charges @ 0.055 on (a+b+c+d)				241.43	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				463.10	
			Rate perm (a+b+c+d+e+f)				5094.13	
						say	5094.00	
		Note.	If curb concrete is carried out within steel liner, cost of formwork shall be excluded.					
12.11		B	Well steining					
		(I)	PCC M15 Grade					
			Same as for 12.8 (A) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3187.00	Item 12.8 (A)
			d) formwork @ 10 per cent of the cost of concrete				318.70	
			e) Overhead charges @ 0.055 on (a+b+c+d)				192.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				369.85	
			Rate perm (a+b+c+d+e+f)				4068.36	
						say	4068.00	
12.11 B		(ii)	PCC M20 Grade					
			Same as for 12.8 (B) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3524.00	Item 12.8 (B) PCC
			d) formwork @ 10 per cent of the cost of concrete				352.40	
			e) Overhead charges @ 0.055 on (a+b+c+d)				213.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				408.96	
			Rate perm (a+b+c+d+e+f)				4498.56	
						say	4499.00	
12.11 B		(iii)	RCC M20 Grade					
			Same as for 12.8 (C) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3542.00	Item 12.8 (C)
			d) formwork @ 10 per cent of the cost of concrete				354.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				214.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				411.05	
			Rate perm (a+b+c+d+e+f)				4521.54	
						say	4522.00	
12.11 B (iii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3222.00	Item 12.8 (C)
			d) formwork @ 10 per cent of the cost of concrete				322.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				194.93	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				373.91	
			Rate perm (a+b+c+d+e+f)				4113.04	
						say	4113.00	
12.11 B		(iv)	PCC M25 Grade					
			Same as for 12.8 (D) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3800.00	Item 12.8 (D)
			d) formwork @ 10 per cent of the cost of concrete				380.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				229.90	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				440.99	
			Rate perm (a+b+c+d+e+f)				4850.89	
						say	4851.00	
12.11 B (iv)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3482.00	Item 12.8 (D)
			d) formwork @ 10 per cent of the cost of concrete				348.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				210.66	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				404.09	
			Rate perm (a+b+c+d+e+f)				4444.95	
						say	4445.00	
12.11 B		(v)	RCC M25 Grade					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Same as for 12.8 (E) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3822.00	Item 12.8 (E)
			d) formwork @ 10 per cent of the cost of concrete				382.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				231.23	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				443.54	
			Rate perm (a+b+c+d+e+f)				4878.97	
						say	4879.00	
12.11 B (v)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3503.00	Item 12.8 (E)
			d) formwork @ 10 per cent of the cost of concrete				350.30	DIR used item
			e) Overhead charges @ 0.055 on (a+b+c+d)				211.93	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				406.52	
			Rate perm (a+b+c+d+e+f)				4471.75	
						say	4472.00	
'12.11 B		(vi)	PCC M30 Grade					
			Same as for 12.8 (F) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3830.00	Item 12.8 (F)
			d) formwork @ 10 per cent of the cost of concrete				383.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				231.72	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				444.47	
			Rate perm (a+b+c+d+e+f)				4889.19	
						say	4889.00	
12.11 B (vi)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3509.00	Item 12.8 (F)
			d) formwork @ 10 per cent of the cost of concrete				350.90	
			e) Overhead charges @ 0.055 on (a+b+c+d)				212.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				407.22	
			Rate perm (a+b+c+d+e+f)				4479.41	
						say	4479.00	
'12.11 B		(vii)	RCC M30 Grade					
			Same as for 12.8 (G) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3839.00	Item 12.8 (G)
			d) formwork @ 10 per cent of the cost of concrete				383.90	
			e) Overhead charges @ 0.055 on (a+b+c+d)				232.26	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				445.52	
			Rate perm (a+b+c+d+e+f)				4900.68	
						say	4901.00	
12.11 B (vii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3520.00	Item 12.8 (G)
			d) formwork @ 10 per cent of the cost of concrete				352.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				212.96	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				408.50	
			Rate perm (a+b+c+d+e+f)				4493.46	
						say	4493.00	
'12.11 B		(viii)	RCC M35 Grade					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Same as for 12.8 (H) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3916.00	Item 12.8 (H) Case I
			d) formwork @ 10 per cent of the cost of concrete				391.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				236.92	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				454.45	
			Rate perm (a+b+c+d+e+f)				4998.97	
						say	4999.00	
12.11 B (viii)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3658.00	Item 12.8 (H)
			d) formwork @ 10 per cent of the cost of concrete				365.80	DIR used item
			e) Overhead charges @ 0.055 on (a+b+c+d)				221.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				424.51	
			Rate perm (a+b+c+d+e+f)				4669.62	
						say	4670.00	
12.11 B		(ix)	RCC M40 Grade					
			Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	51.60	5000.00	258000.00	M-015
			Coarse Sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture	kg	206.00	36.00	7416.00	M-076
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300xL	4.32	1296.00	Lead= 1 , P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3699.00			
			d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery				44379.38	
			e) Overhead charges @ 0.055 on (a+b+c+d)				26849.53	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				51502.28	
			cost of 120 cum = a+b+c+d+e+f				566525.03	
			Rate per cum = (a+b+c+d+e+f)/120				4721.04	
						say	4721.00	
12.11 C		C	Bottom Plug					
			Concrete to be placed using tremie pipe					
			Note: 10% extra cement to be added where under water concreting is involved					
		(i)	PCC Grade M20					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cement	tonne	5.55	5000.00	27750.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm Aggregate	cum	5.40	999.65	5398.11	M-042
			20 mm Aggregate	cum	5.40	1110.00	5994.00	M-041
			10 mm Aggregate	cum	2.70	899.36	2428.27	M-039
			Admixture	Kg	18.60	36.00	669.60	M-076
			b) Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	540.10	3240.60	P&M-41
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3915.00			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2547.57	
			d) Overhead charges @ 0.055 on (a+b+c)				3369.83	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6463.95	
			cost of 15 cum = a+b+c+d+e				71103.43	
			Rate per cum = (a+b+c+d+e)/15				4740.23	
						say	4740.00	
12.11 C (i)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			Unit ; cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	44.40	5000.00	222000.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture	Kg	148.80	36.00	5356.80	M-076
			b) Labour					
			Mate	day	0.88	314.67	276.91	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3382.00			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				17943.84	
			d) Overhead charges @ 0.055 on (a+b+c)				23303.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				44699.41	
			cost of 120 cum = a+b+c+d+e				491693.49	
			Rate per cum = (a+b+c+d+e)/120				4097.45	
						say	4097.00	
'12.11 C		(ii)	PCC Grade M25					
		Case I	Using Concrete Mixer					
			Unit = cum					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.99	5000.00	29950.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm Aggregate	cum	5.40	999.65	5398.11	M-042
			20 mm Aggregate	cum	5.40	1110.00	5994.00	M-041
			10 mm Aggregate	cum	2.70	899.36	2428.27	M-039
			Admixture	Kg	21.60	36.00	777.60	M-076
			b) Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	540.10	3240.60	P&M-41
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4069.00			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2662.97	
			d) Overhead charges @ 0.055 on (a+b+c)				3503.12	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6719.62	
			cost of 15 cum = a+b+c+d+e				73915.78	
			Rate per cum = (a+b+c+d+e)/15				4927.72	
						say	4928.00	
12.11 C (ii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	47.88	5000.00	239400.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture	Kg	172.80	36.00	6220.80	M-076
			b) Labour					
			Mate	day	0.88	314.67	276.91	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3534.00			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				18857.04	
			d) Overhead charges @ 0.055 on (a+b+c)				24357.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46722.60	
			cost of 120 cum = a+b+c+d+e				513948.63	
			Rate per cum = (a+b+c+d+e)/120				4282.91	
						say	4283.00	
'12.11 C		(iii)	PCC Grade M30					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Case I	Using Concrete Mixer					
			Unit = 1 cum					
			Taking output = 15 cum					
		a)	Material					
			Cement	tonne	6.08	5000.00	30400.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm Aggregate	cum	5.40	999.65	5398.11	M-042
			20 mm Aggregate	cum	5.40	1110.00	5994.00	M-041
			10 mm Aggregate	cum	2.70	899.36	2428.27	M-039
			Admixture	Kg	21.60	36.00	777.60	M-076
		b)	Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	540.10	3240.60	P&M-41
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4099.00			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2685.47	
		d)	Overhead charges @ 0.055 on (a+b+c)				3529.11	
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				6769.47	
			cost of 15 cum = a+b+c+d+e				74464.12	
			Rate per cum = (a+b+c+d+e)/15				4964.27	
						say	4964.00	
12.11 C (iii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			Unit = cum					
			Taking output = 120 cum					
		a)	Material					
			Cement	tonne	48.64	5000.00	243200.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture	Kg	172.80	36.00	6220.80	M-076
		b)	Labour					
			Mate	day	0.88	314.67	276.91	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
		c)	Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3566.00			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				19047.04	
		d)	Overhead charges @ 0.055 on (a+b+c)				24577.20	
		e)	Contractor's profit @ 0.1 on (a+b+c+d)				47143.55	
			cost of 120 cum = a+b+c+d+e				518579.03	
			Rate per cum = (a+b+c+d+e)/120				4321.49	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						<i>say</i>	4321.00	
'12.11 C		(iv)	PCC Grade M35					
		Case I	Using Concrete Mixer					
			<i>Unit = 1 cum</i>					
			<i>Taking output = 15 cum</i>					
			a) Material					
			Cement	tonne	6.29	5000.00	31450.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm Aggregate	cum	5.40	999.65	5398.11	M-042
			20 mm Aggregate	cum	5.40	1110.00	5994.00	M-041
			10 mm Aggregate	cum	2.70	899.36	2428.27	M-039
			Admixture	Kg	21.60	36.00	777.60	M-076
			b) Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	540.10	3240.60	P&M-41
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4169.00			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2737.97	
			d) Overhead charges @ 0.055 on (a+b+c)				3589.74	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6885.78	
			cost of 15 cum = a+b+c+d+e				75743.57	
			Rate per cum = (a+b+c+d+e)/15				5049.57	
						<i>say</i>	5050.00	
12.11 C (iv)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			<i>Unit = cum</i>					
			<i>Taking output = 120 cum</i>					
			a) Material					
			Cement	tonne	50.28	5000.00	251400.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture	Kg	172.80	36.00	6220.80	M-076
			b) Labour					
			Mate	day	0.88	314.67	276.91	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		3634.00			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				19457.04	
			d) Overhead charges @ 0.055 on (a+b+c)				25050.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				48051.90	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			cost of 120 cum = a+b+c+d+e				528570.93	
			Rate per cum = (a+b+c+d+e)/120				4404.76	
						say	4405.00	
12.11		D	Intermediate plug					
		(i)	Grade M20 PCC					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3915.00	
			d) Overhead charges @ 0.055 on (a+b+c)				215.33	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				413.03	
			Rate per cum = (a+b+c+d+e)				4543.36	
						say	4543.00	
12.11 D (i)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3382.00	
			d) Overhead charges @ 0.055 on (a+b+c)				186.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				356.80	
			Rate per cum = (a+b+c+d+e)				3924.81	
						say	3925.00	
'12.11 D		(ii)	Grade M25 PCC					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4069.00	
			d) Overhead charges @ 0.055 on (a+b+c)				223.80	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				429.28	
			Rate per cum = (a+b+c+d+e)				4722.07	
						say	4722.00	
12.11 D (ii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3534.00	
			d) Overhead charges @ 0.055 on (a+b+c)				194.37	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				372.84	
			Rate per cum = (a+b+c+d+e)				4101.21	
						say	4101.00	
'12.11 D		(iii)	Grade M30 PCC					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4099.00	
			d) Overhead charges @ 0.055 on (a+b+c)				225.45	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				432.44	
			Rate per cum = (a+b+c+d+e)				4756.89	
						say	4757.00	
12.11 D (iii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3566.00	
			d) Overhead charges @ 0.055 on (a+b+c)				196.13	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				376.21	
			Rate per cum = (a+b+c+d+e)				4138.34	
						say	4138.00	
12.11		E	Top plug					
		(i)	Grade M15 PCC					
			Same as Item 12.8(a) excluding formwork					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3187.00	
			d) Overhead charges @ 0.055 on (a+b+c)				175.29	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				336.23	
			Rate per cum = (a+b+c+d+e)				3698.51	
						say	3699.00	
			Same as Item 12.8(b) excluding formwork					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3524.00	
			d) Overhead charges @ 0.055 on (a+b+c)				193.82	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				371.78	
			Rate per cum = (a+b+c+d+e)				4089.60	
						say	4090.00	
			Same as Item 12.8 (d) excluding formwork					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3800.00	
			d) Overhead charges @ 0.055 on (a+b+c)				209.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				400.90	
			Rate per cum = (a+b+c+d+e)				4409.90	
						say	4410.00	
12.11 E (iii)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3482.00	
			d) Overhead charges @ 0.055 on (a+b+c)				191.51	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				367.35	
			Rate per cum = (a+b+c+d+e)				4040.86	
						say	4041.00	
12.11 E		(iv)	Grade M30 PCC					
			Same as Item 12.8(f) excluding formwork					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3830.00	
			d) Overhead charges @ 0.055 on (a+b+c)				210.65	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				404.07	
			Rate per cum = (a+b+c+d+e)				4444.72	
						say	4445.00	
12.11 E (iv)		Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3509.00	
			d) Overhead charges @ 0.055 on (a+b+c)				193.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				370.20	
			Rate per cum = (a+b+c+d+e)				4072.19	
						say	4072.00	
12.11		F	Well cap					
		(i)	RCC Grade M20					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.12	5000.00	25600.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Form Work @ 4 per cent of a+b+c				2107.06	
			d) Overhead charges @ 0.055 on (a+b+c)				3013.09	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5779.66	
			cost of 15 cum = a+b+c+d+e				63576.26	
			Rate per cum = (a+b+c+d+e)/15				4238.42	
						say	4238.00	
12.11 F (i)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	40.92	5000.00	204600.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader (capacity 1 cum)	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Formwork @ 4 per cent of (a+b+c)				15319.11	
			d) Overhead charges @ 0.055 on (a+b+c)				21906.33	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				42020.33	
			cost of 120 cum = a+b+c+d+e				462223.62	
			Rate per cum = (a+b+c+d+e)/120				3851.86	
						say	3852.00	
12.11 F		(ii)	RCC Grade M25					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.05	5000.00	30250.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Form Work @ 3.75 per cent of a+b+c				2149.74	
			d) Overhead charges @ 0.055 on (a+b+c)				3271.19	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6274.74	
			cost of 15 cum = a+b+c+d+e				69022.12	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e)/15				4601.47	
						say	4601.00	
12.11 F (ii)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.40	5000.00	242000.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader (capacity 1 cum)	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Formwork @ 3.75 per cent of (a+b+c)				15764.17	
			d) Overhead charges @ 0.055 on (a+b+c)				23987.81	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46012.98	
			cost of 120 cum = a+b+c+d+e				506142.81	
			Rate per cum = (a+b+c+d+e)/120				4217.86	
						say	4218.00	
12.11 F		(iii)	RCC Grade M30					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.10	5000.00	30500.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Formwork @ 3.5 per cent of (a+b+c)				2015.18	
			d) Overhead charges @ 0.055 on (a+b+c)				3277.54	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6286.92	
			cost of 15 cum = a+b+c+d+e				69156.08	
			Rate per cum = (a+b+c+d+e)/15				4610.41	
						say	4610.00	
12.11 F (iii)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.79	5000.00	243950.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader (capacity 1 cum)	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Formwork @ 3.5 per cent of (a+b+c)				14781.47	
			d) Overhead charges @ 0.055 on (a+b+c)				24041.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46115.03	
			cost of 120 cum = a+b+c+d+e				507265.37	
			Rate per cum = (a+b+c+d+e)/120				4227.21	
						say	4227.00	
12.11 F		(iv)	RCC Grade M35					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.33	5000.00	31650.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Formwork @ 3 per cent of (a+b+c)				1761.79	
			d) Overhead charges @ 0.055 on (a+b+c)				3326.85	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6381.51	
			cost of 15 cum = a+b+c+d+e				70196.61	
			Rate per cum = (a+b+c+d+e)/15				4679.77	
						say	4680.00	
12.11 F (iv)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.64	5000.00	253200.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Loader (capacity 1 cum)	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Formwork @ 3 per cent of (a+b+c)				12947.34	
			d) Overhead charges @ 0.055 on (a+b+c)				24448.88	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46897.41	
			cost of 120 cum = a+b+c+d+e				515871.47	
			Rate per cum = (a+b+c+d+e)/120				4298.93	
						say	4299.00	
		Note	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
'12.11 F		(v)	RCC M40 Grade					
			Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
		a)	Material					
			Cement	tonne	52.20	5000.00	261000.00	M-015
			Coarse Sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture	kg	206.00	36.00	7416.00	M-076
		b)	Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
		c)	Machinery					
			Batching Plant	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader 1 cum capacity	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	854.55	12818.25	P&M-68
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300.L	4.32	1296.00	P&M-69 Lead= 1 km
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				13403.82	
			d) Overhead charges @ 0.055 on (a+b+c)				25310.87	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				48550.85	
			cost of 120 cum = a+b+c+d+e				534059.38	
			Rate per cum = (a+b+c+d+e)/120				4450.49	
						say	4450.00	
12.12	Section 1200		Sinking of 6 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 6 m.					
		A	Sandy Soil					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking = 0.50 m per hour.					
		a)	Labour					
			Mate	day	0.12	314.67	37.76	L-12
			Sinker (skilled)	day	1.00	414.80	414.80	L-15

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Sinking helper (semi-skilled)	day	2.00	314.67	629.34	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	2.00	1176.12	2352.24	P&M-90
			Consumables in sinking @10 per cent of (b)				235.22	
			c) Overhead charges @ 0.055 on (a+b)				201.82	
			d) Contractor's profit @ 0.1 on (a+b+c)				387.12	
			Rate per metre = (a+b+c+d)				4258.30	
						say	4258.00	
12.12 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking = 0.33 m per hour.					
			a) Labour					
			Mate	day	0.15	314.67	47.20	L-12
			Sinker	day	1.25	414.80	518.50	L-15
			Sinking helper (semi-skilled)	day	2.50	314.67	786.68	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	1176.12	3528.36	P&M-90
			Consumables in sinking @10 per cent of (b)				352.84	
			c) Overhead charges @ 0.055 on (a+b)				287.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				552.14	
			Rate per metre = (a+b+c+d)				6073.56	
						say	6074.00	
12.12 A		(iii)	Beyond 10m upto 20m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	6378.00			
			12th m	5%	6697.00			
			13th m	5%	7032.00			
			14th m	5%	7384.00			
			15th m	5%	7753.00			
			16th m	5%	8141.00			
			17th m	5%	8548.00			
			18th m	5%	8975.00			
			19th m	5%	9424.00			
			20th m	5%	9895.00			
			Total Cost from 10m upto 20m		80227.00			
			Avg Rate per metre		8023.00			
12.12 A		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	10637.00	12764.00		
			22nd m	7.5%	11435.00	13722.00		
			23rd m	7.5%	12293.00	14752.00		
			24th m	7.5%	13215.00	15858.00		
			25th m	7.5%	14206.00	17047.00		
			26th m	7.5%	15271.00	18325.00		
			27th m	7.5%	16416.00	19699.00		
			28th m	7.5%	17647.00	21176.00		
			29th m	7.5%	18971.00	22765.00		
			30th m	7.5%	20394.00	24473.00		
			Total Cost from 20m upto 30m		150485.00	180581.00		
			Avg Rate per metre		15049.00	18058.00		
12.12 A		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			31st m	10%	22433.00	26920.00		
			32nd	10%	24676.00	29611.00		
			33rd m	10%	27144.00	32573.00		
			34th m	10%	29858.00	35830.00		
			35th m	10%	32844.00	39413.00		
			36th m	10%	36128.00	43354.00		
			37th m	10%	39741.00	47689.00		
			38th m	10%	43715.00	52458.00		
			39th m	10%	48087.00	57704.00		
			40th m	10%	52896.00	63475.00		
			Total Cost from 30m upto 40m		357522.00	429027.00		
			Avg Rate per metre		35752.00	42903.00		
12.12		B	Clayey Soil (6m dia. Well)					
			Unit = Running Meter.					
			Taking output = 1 meter					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking = 0.33 m per hour.					
			a) Labour					
			Mate	day	0.15	314.67	47.20	L-12
			Sinker (skilled)	day	1.50	414.80	622.20	L-15
			Sinking helper (semi-skilled)	day	2.25	314.67	708.01	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	1176.12	3528.36	P&M-90
			Consumables in sinking @ 10 per cent of (b)				352.84	
			c) Overhead charges @ 0.055 on (a+b)				289.22	
			d) Contractor's profit @ 0.1 on (a+b+c)				554.78	
			Rate per metre = (a+b+c+d)				6102.61	
						say	6103.00	
12.12 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking = 0.17 m per hour.					
			a) Labour					
			Mate	day	0.30	314.67	94.40	L-12
			Sinker	day	3.00	414.80	1244.40	L-15
			Sinking helper (semi-skilled)	day	4.50	314.67	1416.02	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	2.00	513.00	1026.00	P&M-78
			Consumables in sinking @ 10 per cent of (b)				808.27	
			c) Overhead charges @ 0.055 on (a+b)				640.52	
			d) Contractor's profit @ 0.1 on (a+b+c)				1228.63	
			Rate per metre = (a+b+c+d)				13514.96	
						say	13515.00	
12.12 B		(iii)	Beyond 10 m upto 20 m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if required		
			11th m	5%	14191.00	14901.00		
			12th m	5%	14901.00	15646.00		
			13th m	5%	15646.00	16428.00		
			14th m	5%	16428.00	17249.00		
			15th m	5%	17249.00	18111.00		
			16th m	5%	18111.00	19017.00		
			17th m	5%	19017.00	19968.00		
			18th m	5%	19968.00	20966.00		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			19th m	5%	20966.00	22014.00		
			20th m	5%	22014.00	23115.00		
			Total Cost from 10m upto 20m		178491.00	187415.00		
			Avg Rate per metre		17849.00	18742.00		
12.12 B		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering of the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			21st m	7.5%	23665.00	29581.00	31060.00	
			22nd m	7.5%	25440.00	31800.00	33390.00	
			23rd m	7.5%	27348.00	34185.00	35894.00	
			24th m	7.5%	29399.00	36749.00	38586.00	
			25th m	7.5%	31604.00	39505.00	41480.00	
			26th m	7.5%	33974.00	42468.00	44591.00	
			27th m	7.5%	36522.00	45653.00	47936.00	
			28th m	7.5%	39261.00	49076.00	51530.00	
			29th m	7.5%	42206.00	52758.00	55396.00	
			30th m	7.5%	45371.00	56714.00	59550.00	
			Total Cost from 20m upto 30m		334790.00	418489.00	439413.00	
			Avg Rate per metre		33479.00	41849.00	43941.00	
12.12 B		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(b) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	49908.00	59890.00	62885.00	
			32nd	10%	54899.00	65879.00	69173.00	
			33rd m	10%	60389.00	72467.00	76090.00	
			34th m	10%	66428.00	79714.00	83700.00	
			35th m	10%	73071.00	87685.00	92069.00	
			36th m	10%	80378.00	96454.00	101277.00	
			37th m	10%	88416.00	106099.00	111404.00	
			38th m	10%	97258.00	116710.00	122546.00	
			39th m	10%	106984.00	128381.00	134800.00	
			40th m	10%	117682.00	141218.00	148279.00	
			Total Cost from 30m upto 40m		795413.00	954497.00	1002223.00	
			Avg Rate per metre		79541.00	95450.00	100222.00	
12.12		C	Soft Rock (6m dia well)					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in Soft rock strata up to 3m					
			Rate of sinking = 0.25 m per hour.					
		a)	Labour					
			Mate	day	0.92	314.67	289.50	L-12
			Sinker (skilled)	day	3.00	414.80	1244.40	L-15
			Sinking helper (semi-skilled)	day	20.00	314.67	6293.40	L-14
			Diver	day	0.50	414.80	207.40	L-07
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1176.12	4704.48	P&M-90
			Air compressor with pneumatic breakers	hour	3.50	513.00	1795.50	P&M-78
			Consumables in sinking @ 10 per cent of (b)				650.00	
			Add for dewatering @ of 5 per cent of (a+b), if required				759.23	
		c)	Overhead charges @ 0.055 on (a+b)				876.91	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Contractor's profit @ 0.1 on (a+b+c)				1682.08	
			Rate per metre = (a+b+c+d)				18502.91	
						<i>say</i>	18503.00	
12.12		D	Hard Rock (6m dia well)					
			<i>Unit = Running Meter</i>					
			<i>Taking output = 1 m</i>					
			Depth in hard rock strata upto 3 m					
			Rate of sinking = 0.17 m per hour.					
			a) Material					
			Gelatine 80 per cent	Kg	4.00	120.72	482.88	M-059
			Electric Detonators	each	18.00	5.75	103.42	M-058/100
			b) Labour					
			Mate	day	1.56	314.67	490.89	L-12
			Driller	day	2.00	314.67	629.34	L-06
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	12.00	300.36	3604.32	L-13
			Mazdoor (Skilled)	day	4.00	414.80	1659.20	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	513.00	1026.00	P&M-78
			Dewatering @ 5 per cent of cost of (b+c), if required.				728.51	
			Consumables in sinking @ 10 per cent of cost of (b).				808.27	
			d) Overhead charges @ 0.055 on (a+b+c)				918.13	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1761.14	
			Rate per metre = (a+b+c+d+e)				19372.52	
						<i>say</i>	19373.00	
12.13	Section 1200		Sinking of 7 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.					
			<i>Unit = Running Meter.</i>					
			<i>Taking output = 1 m</i>					
			Diameter of well - 7 m.					
		A	Sandy Soil					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking = 0.30 m per hour.					
			a) Labour					
			Mate	day	0.15	314.67	47.20	L-12
			Sinker (skilled)	day	1.25	414.80	518.50	L-15
			Sinking helper (semi-skilled)	day	2.50	314.67	786.68	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	3.25	1176.12	3822.39	P&M-90
			Consumables in sinking @10 per cent of (b)				382.24	
			c) Overhead charges @ 0.055 on (a+b)				305.64	
			d) Contractor's profit @ 0.1 on (a+b+c)				586.26	
			Rate per metre = (a+b+c+d)				6448.90	
						<i>say</i>	6449.00	
12.13 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.18	314.67	56.64	L-12
			Sinker	day	1.50	414.80	622.20	L-15
			Sinking helper (semi-skilled)	day	3.00	314.67	944.01	L-14

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1176.12	5292.54	P&M-90
			Consumables in sinking @10 per cent of (b)				529.25	
			c) Overhead charges @ 0.055 on (a+b)				409.46	
			d) Contractor's profit @ 0.1 on (a+b+c)				785.41	
			Rate per metre = (a+b+c+d)				8639.51	
						say	8640.00	
12.13 A		(iii)	Beyond 10m upto 20m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	9071.00			
			12th m	5%	9525.00			
			13th m	5%	10001.00			
			14th m	5%	10501.00			
			15th m	5%	11026.00			
			16th m	5%	11577.00			
			17th m	5%	12156.00			
			18th m	5%	12764.00			
			19th m	5%	13402.00			
			20th m	5%	14072.00			
			Total Cost from 10m upto 20m		114095.00			
			Avg Rate per metre		11410.00			
12.13 A		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).			(a)	(b)Including 20% for Kentledge	
			21st m	7.5%	15127.00	18152.00		
			22nd m	7.5%	16262.00	19514.00		
			23rd m	7.5%	17482.00	20978.00		
			24th m	7.5%	18793.00	22552.00		
			25th m	7.5%	20202.00	24242.00		
			26th m	7.5%	21717.00	26060.00		
			27th m	7.5%	23346.00	28015.00		
			28th m	7.5%	25097.00	30116.00		
			29th m	7.5%	26979.00	32375.00		
			30th m	7.5%	29002.00	34802.00		
			Total Cost from 20m upto 30m		214007.00	256806.00		
			Avg Rate per metre		21401.00	25681.00		
12.13 A		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.			(a)	(b)Including 20% for Kentledge	
			31st m	10%	31902.00	38282.00		
			32nd	10%	35092.00	42110.00		
			33rd m	10%	38601.00	46321.00		
			34th m	10%	42461.00	50953.00		
			35th m	10%	46707.00	56048.00		
			36th m	10%	51378.00	61654.00		
			37th m	10%	56516.00	67819.00		
			38th m	10%	62168.00	74602.00		
			39th m	10%	68385.00	82062.00		
			40th m	10%	75224.00	90269.00		
			Total Cost from 30m upto 40m		508434.00	610120.00		
			Avg Rate per metre		50843.00	61012.00		
12.13		B	Clayey Soil (7m dia. Well)					
			Unit = Running Meter.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Taking output = 1 cum					
		(I)	Depth below bed level upto 3.0 M					
			Rate of sinking = 0.22 m per hour.					
		a)	Labour					
			Mate	day	0.18	314.67	56.64	L-12
			Sinker (skilled)	day	1.50	414.80	622.20	L-15
			Sinking helper (semi-skilled)	day	3.00	314.67	944.01	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1176.12	5292.54	P&M-90
			Consumables in sinking @ 10 per cent of (b)				529.25	
		d)	Overhead charges @ 0.055 on (a+b)				409.46	
		e)	Contractor's profit @ 0.1 on (a+b+c)				785.41	
			Rate per metre = (a+b+c+d)				8639.51	
						say	8640.00	
12.13 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking = 0.17 m per hour.					
		a)	Labour					
			Mate	day	0.26	314.67	81.81	L-12
			Sinker	day	2.00	414.80	829.60	L-15
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.25	513.00	1667.25	P&M-78
			Consumables in sinking @ 10 per cent of (b)				872.40	
		c)	Overhead charges @ 0.055 on (a+b)				647.16	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1241.36	
			Rate per metre = (a+b+c+d)				13654.98	
						say	13655.00	
12.13 B		(iii)	Beyond 10 m upto 20 m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.			(a)	(b) Including for dewatering @ 5% of cost, if required	
			11th m	5%	14338.00	15055.00		
			12th m	5%	15055.00	15808.00		
			13th m	5%	15808.00	16598.00		
			14th m	5%	16598.00	17428.00		
			15th m	5%	17428.00	18299.00		
			16th m	5%	18299.00	19214.00		
			17th m	5%	19214.00	20175.00		
			18th m	5%	20175.00	21184.00		
			19th m	5%	21184.00	22243.00		
			20th m	5%	22243.00	23355.00		
			Total Cost from 10m upto 20m		180342.00	189359.00		
			Avg Rate per metre		18034.00	18936.00		
12.13 B		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).			(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	7.5%	23911.00	29889.00	31383.00	
			32nd	7.5%	25704.00	32130.00	33737.00	
			33rd m	7.5%	27632.00	34540.00	36267.00	
			34th m	7.5%	29704.00	37130.00	38987.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			35th m	7.5%	31932.00	39915.00	41911.00	
			36th m	7.5%	34327.00	42909.00	45054.00	
			37th m	7.5%	36902.00	46128.00	48434.00	
			38th m	7.5%	39670.00	49588.00	52067.00	
			39th m	7.5%	42645.00	53306.00	55971.00	
			40th m	7.5%	45843.00	57304.00	60169.00	
			Total Cost from 30m upto 40m		338270.00	422839.00	443980.00	
			Avg Rate per metre		33827.00	42284.00	44398.00	
12.13 B		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	50427.00	60512.00	63538.00	
			32nd	10%	55470.00	66564.00	69892.00	
			33rd m	10%	61017.00	73220.00	76881.00	
			34th m	10%	67119.00	80543.00	84570.00	
			35th m	10%	73831.00	88597.00	93027.00	
			36th m	10%	81214.00	97457.00	102330.00	
			37th m	10%	89335.00	107202.00	112562.00	
			38th m	10%	98269.00	117923.00	123819.00	
			39th m	10%	108096.00	129715.00	136201.00	
			40th m	10%	118906.00	142687.00	149821.00	
			Total Cost from 30m upto 40m		803684.00	964420.00	1012641.00	
			Avg Rate per metre		80368.00	96442.00	101264.00	
12.13		C	Soft Rock (7m dia well)					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking = 0.22 m per hour.					
		a)	Labour					
			Mate	day	0.58	314.67	182.51	L-12
			Sinker (skilled)	day	4.00	414.80	1659.20	L-15
			Sinking helper (semi-skilled)	day	10.00	314.67	3146.70	L-14
			Diver	day	0.75	414.80	311.10	L-07
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1176.12	5292.54	P&M-90
			Air compressor with pneumatic breakers	hour	3.75	513.00	1923.75	P&M-78
			Consumables in sinking @ 10 per cent of (b)				721.63	
			Add for dewatering @ of 5 per cent of (a+b), if required				625.79	
		c)	Overhead charges @ 0.055 on (a+b)				762.48	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1462.57	
			Rate per metre = (a+b+c+d)				16088.26	
						say	16088.00	
12.13		D	Hard Rock (7m dia well)					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in Hard rock strata up to 3 m					
			Rate of sinking = 0.17 m per hour.					
		a)	Material					
			Gelatine 80 per cent	Kg	7.00	120.72	845.04	M-059
			Electric Detonators	each	30.00	5.75	172.37	M-058/100
		b)	Labour					
			Mate	day	1.60	314.67	503.47	L-12
			Driller	day	2.00	314.67	629.34	L-06

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	18.00	300.36	5406.48	L-13
			Mazdoor (Skilled)	day	4.00	414.80	1659.20	L-15
			Diver	day	0.50	414.80	207.40	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	513.00	1026.00	P&M-78
			Dewatering @ 5 per cent of cost of (b+c), if required.				829.62	
			Consumables in sinking @ 10 per cent of cost of (b).				891.23	
			d) Overhead charges @ 0.055 on (a+b+c)				1063.18	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2039.38	
			Rate per metre = (a+b+c+d+e)				22433.13	
						say	22433.00	
12.14	Section 1200		Sinking of 8 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 8 m.					
		A	Sandy Soil					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking @ 0.25 m/hour					
			a) Labour					
			Mate	day	0.18	314.67	56.64	L-12
			Sinker (skilled)	day	1.50	414.80	622.20	L-15
			Sinking helper (semi-skilled)	day	3.00	314.67	944.01	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1176.12	4704.48	P&M-90
			Consumables in sinking @10 per cent of (b)				470.45	
			c) Overhead charges @ 0.055 on (a+b)				373.88	
			d) Contractor's profit @ 0.1 on (a+b+c)				717.17	
			Rate per metre = (a+b+c+d)				7888.82	
						say	7889.00	
12.14 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.20 m/hour					
			a) Labour					
			Mate	day	0.25	314.67	78.67	L-12
			Sinker	day	1.75	414.80	725.90	L-15
			Sinking helper (semi-skilled)	day	3.50	314.67	1101.35	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1176.12	5880.60	P&M-90
			Consumables in sinking @10 per cent of (b)				588.06	
			c) Overhead charges @ 0.055 on (a+b)				460.60	
			d) Contractor's profit @ 0.1 on (a+b+c)				883.52	
			Rate per metre = (a+b+c+d)				9718.69	
						say	9719.00	
12.14 A		(iii)	Beyond 10m upto 20m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	10205.00			
			12th m	5%	10715.00			
			13th m	5%	11251.00			

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			14th m	5%	11814.00			
			15th m	5%	12405.00			
			16th m	5%	13025.00			
			17th m	5%	13676.00			
			18th m	5%	14360.00			
			19th m	5%	15078.00			
			20th m	5%	15832.00			
			Total Cost from 10m upto 20m		128361.00			
			Avg Rate per metre		12836.00			
12.14 A		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	17019.00	20423.00		
			22nd m	7.5%	18295.00	21954.00		
			23rd m	7.5%	19667.00	23600.00		
			24th m	7.5%	21142.00	25370.00		
			25th m	7.5%	22728.00	27274.00		
			26th m	7.5%	24433.00	29320.00		
			27th m	7.5%	26265.00	31518.00		
			28th m	7.5%	28235.00	33882.00		
			29th m	7.5%	30353.00	36424.00		
			30th m	7.5%	32629.00	39155.00		
			Total Cost from 20m upto 30m		240766.00	288920.00		
			Avg Rate per metre		24077.00	28892.00		
12.14 A		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	35892.00	43070.00		
			32nd	10%	39481.00	47377.00		
			33rd m	10%	43429.00	52115.00		
			34th m	10%	47772.00	57326.00		
			35th m	10%	52549.00	63059.00		
			36th m	10%	57804.00	69365.00		
			37th m	10%	63584.00	76301.00		
			38th m	10%	69942.00	83930.00		
			39th m	10%	76936.00	92323.00		
			40th m	10%	84630.00	101556.00		
			Total Cost from 30m upto 40m		572019.00	686423.00		
			Avg Rate per metre		57202.00	68642.00		
12.14		B	Clayey Soil (8m dia. Well)					
			Unit = Running Meter.					
			Taking output = 1 meter					
		(i)	Depth from bed level upto 3.0 M					
			Rate of sinking @ 0.18 m/hour					
		a)	Labour					
			Mate	day	0.22	314.67	69.23	L-12
			Sinker (skilled)	day	2.00	414.80	829.60	L-15
			Sinking helper (semi-skilled)	hour	3.50	314.67	1101.35	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.		5.50	1176.12	6468.66	P&M-90
			Consumables in sinking @ 10 per cent of (b)				646.87	
		c)	Overhead charges @ 0.055 on (a+b)				501.36	
		d)	Contractor's profit @ 0.1 on (a+b+c)				961.71	
			Rate per metre = (a+b+c+d)				10578.77	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						<i>say</i>	<u>10579.00</u>	
12.14 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.17 m/hour					
		a)	Labour					
			Mate	day	0.32	314.67	100.69	L-12
			Sinker	day	2.50	414.80	1037.00	L-15
			Sinking helper (semi-skilled)	day	4.50	314.67	1416.02	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.50	513.00	1795.50	P&M-78
			Consumables in sinking @ 10 per cent of (b)				885.22	
		c)	Overhead charges @ 0.055 on (a+b)				676.01	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1296.72	
			Rate per metre = (a+b+c+d)				14263.88	
						<i>say</i>	<u>14264.00</u>	
12.14 B		(iii)	Beyond 10 m upto 20 m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.			(a)	(b) Including for dewatering @ 5% of cost, if required	
			11th m	5%	14977.00	15726.00		
			12th m	5%	15726.00	16512.00		
			13th m	5%	16512.00	17338.00		
			14th m	5%	17338.00	18205.00		
			15th m	5%	18205.00	19115.00		
			16th m	5%	19115.00	20071.00		
			17th m	5%	20071.00	21075.00		
			18th m	5%	21075.00	22129.00		
			19th m	5%	22129.00	23235.00		
			20th m	5%	23235.00	24397.00		
			Total Cost from 10m upto 20m		188383.00	197803.00		
			<u>Avg Rate per metre</u>		<u>18838.00</u>	<u>19780.00</u>		
12.14 B		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).			(a)	(c)Including 25% for Kentledge	(b) Including 5% for dewatering, if required
			31st m	7.5%	24978.00	31223.00	32784.00	
			32nd	7.5%	26851.00	33564.00	35242.00	
			33rd m	7.5%	28865.00	36081.00	37885.00	
			34th m	7.5%	31030.00	38788.00	40727.00	
			35th m	7.5%	33357.00	41696.00	43781.00	
			36th m	7.5%	35859.00	44824.00	47065.00	
			37th m	7.5%	38548.00	48185.00	50594.00	
			38th m	7.5%	41439.00	51799.00	54389.00	
			39th m	7.5%	44547.00	55684.00	58468.00	
			40th m	7.5%	47888.00	59860.00	62853.00	
			Total Cost from 30m upto 40m		353362.00	441704.00	463788.00	
			<u>Avg Rate per metre</u>		<u>35336.00</u>	<u>44170.00</u>	<u>46379.00</u>	
12.14 B		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	52677.00	63212.00	66373.00	
			32nd	10%	57945.00	69534.00	73011.00	
			33rd m	10%	63740.00	76488.00	80312.00	
			34th m	10%	70114.00	84137.00	88344.00	
			35th m	10%	77125.00	92550.00	97178.00	
			36th m	10%	84838.00	101806.00	106896.00	
			37th m	10%	93322.00	111986.00	117585.00	
			38th m	10%	102654.00	123185.00	129344.00	
			39th m	10%	112919.00	135503.00	142278.00	
			40th m	10%	124211.00	149053.00	156506.00	
			Total Cost from 30m upto 40m		839545.00	1007454.00	1057827.00	
			Avg Rate per metre		83955.00	100745.00	105783.00	
12.14		C	Soft Rock (8m dia well)					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.20 m/hour					
			a) Labour					
			Mate	day	0.68	314.67	213.98	L-12
			Sinker (skilled)	day	4.00	414.80	1659.20	L-15
			Sinking helper (semi-skilled)	day	12.00	314.67	3776.04	L-14
			Diver	day	1.00	414.80	414.80	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1176.12	5880.60	P&M-90
			Air compressor with pneumatic breakers	hour	3.75	513.00	1923.75	P&M-78
			Consumables in sinking @ 10 per cent of (b)				780.44	
			Add for dewatering @ of 5 per cent of (a+b), if required				732.44	
			c) Overhead charges @ 0.055 on (a+b)				845.97	
			d) Contractor's profit @ 0.1 on (a+b+c)				1622.72	
			Rate per metre = (a+b+c+d)				17849.93	
						say	17850.00	
12.14		D	Hard Rock (8m dia well)					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking @ 0.17 m/hour					
			a) Material					
			Gelatine 80 per cent	Kg	8.00	120.72	965.76	M-059
			Electric Detonators	each	32.00	5.75	183.87	M-058/100
			b) Labour					
			Mate	day	1.09	314.67	342.99	L-12
			Driller	day	2.00	314.67	629.34	L-06
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	20.00	300.36	6007.20	L-13
			Mazdoor (Skilled)	day	4.00	414.80	1659.20	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	513.00	1026.00	P&M-78
			Dewatering @ 5 per cent of cost of (b+c), if required.				841.26	
			Consumables in sinking @ 10 per cent of cost of (b).				874.24	
			d) Overhead charges @ 0.055 on (a+b+c)				1082.97	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2077.32	
			Rate per metre = (a+b+c+d+e)				22850.57	
						<i>say</i>	22851.00	
12.15	Section 1200		Sinking of 9 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.					
			<i>Unit = Running Meter.</i>					
			<i>Taking output = 1 m</i>					
			Diameter of well - 9 m.					
		A	Sandy Soil					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking @ 0.25 m/hour					
		a)	Labour					
			Mate	day	0.19	314.67	59.79	L-12
			Sinker (skilled)	day	1.50	414.80	622.20	L-15
			Sinking helper (semi-skilled)	day	3.25	314.67	1022.68	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1176.12	4704.48	P&M-90
			Consumables in sinking @10 per cent of (b)				470.45	
		c)	Overhead charges @ 0.055 on (a+b)				378.38	
		d)	Contractor's profit @ 0.1 on (a+b+c)				725.80	
			Rate per metre = (a+b+c+d)				7983.77	
						<i>say</i>	7984.00	
12.15 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.18 m/hour					
		a)	Labour					
			Mate	day	0.27	314.67	84.96	L-12
			Sinker	day	1.75	414.80	725.90	L-15
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	1176.12	6468.66	P&M-90
			Consumables in sinking @10 per cent of (b)				646.87	
		c)	Overhead charges @ 0.055 on (a+b)				505.18	
		d)	Contractor's profit @ 0.1 on (a+b+c)				969.02	
			Rate per metre = (a+b+c+d)				10659.27	
						<i>say</i>	10659.00	
12.15 A		(iii)	Beyond 10m upto 20m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	11192.00			
			12th m	5%	11752.00			
			13th m	5%	12340.00			
			14th m	5%	12957.00			
			15th m	5%	13605.00			
			16th m	5%	14285.00			
			17th m	5%	14999.00			
			18th m	5%	15749.00			
			19th m	5%	16536.00			
			20th m	5%	17363.00			
			Total Cost from 10m upto 20m		140778.00			
			<i>Avg Rate per metre</i>		14078.00			
12.15 A		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	18665.23	22398.00		
			22nd m	7.5%	20065.00	24078.00		
			23rd m	7.5%	21570.00	25884.00		
			24th m	7.5%	23188.00	27826.00		
			25th m	7.5%	24927.00	29912.00		
			26th m	7.5%	26797.00	32156.00		
			27th m	7.5%	28807.00	34568.00		
			28th m	7.5%	30968.00	37162.00		
			29th m	7.5%	33291.00	39949.00		
			30th m	7.5%	35788.00	42946.00		
			Total Cost from 20m upto 30m		264066.23	316879.00		
			Avg Rate per metre		26407.00	31688.00		
12.15 A		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	39366.80	47240.00		
			32nd	10%	43303.00	51964.00		
			33rd m	10%	47633.00	57160.00		
			34th m	10%	52396.00	62875.00		
			35th m	10%	57636.00	69163.00		
			36th m	10%	63400.00	76080.00		
			37th m	10%	69740.00	83688.00		
			38th m	10%	76714.00	92057.00		
			39th m	10%	84385.00	101262.00		
			40th m	10%	92824.00	111389.00		
			Total Cost from 30m upto 40m		627397.80	752878.00		
			Avg Rate per metre		62740.00	75288.00		
12.15		B	Clayey Soil (9m dia. Well)					
			Unit = Running Meter.					
			Taking output = 1 cum					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking 0.17 m / hour					
		a)	Labour					
			Mate	day	0.24	314.67	75.52	L-12
			Sinker (skilled)	day	2.25	414.80	933.30	L-15
			Sinking helper (semi-skilled)	day	3.75	314.67	1180.01	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	1176.12	6762.69	P&M-90
			Consumables in sinking @ 10 per cent of (b)				676.27	
		c)	Overhead charges @ 0.055 on (a+b)				529.53	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1015.73	
			Rate per metre = (a+b+c+d)				11173.05	
						say	11173.00	
12.15 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking 0.15 m / hour					
		a)	Labour					
			Mate	day	0.34	314.67	106.99	L-12
			Sinker	day	2.50	414.80	1037.00	L-15
			Sinking helper (semi-skilled)	day	5.00	314.67	1573.35	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1176.12	7644.78	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.75	513.00	1923.75	P&M-78

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Consumables in sinking @ 10 per cent of (b)				956.85	
			c) Overhead charges @ 0.055 on (a+b)				728.35	
			d) Contractor's profit @ 0.1 on (a+b+c)				1397.11	
			Rate per metre = (a+b+c+d)				15368.18	
						say	15368.00	
12.15 B		(iii)	Beyond 10 m upto 20 m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if required		
			11th m	5%	16136.00	16943.00		
			12th m	5%	16943.00	17790.00		
			13th m	5%	17790.00	18680.00		
			14th m	5%	18680.00	19614.00		
			15th m	5%	19614.00	20595.00		
			16th m	5%	20595.00	21625.00		
			17th m	5%	21625.00	22706.00		
			18th m	5%	22706.00	23841.00		
			19th m	5%	23841.00	25033.00		
			20th m	5%	25033.00	26285.00		
			Total Cost from 10m upto 20m		202963.00	213112.00		
			Avg Rate per metre		20296.00	21311.00		
12.15 B		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	7.5%	26910.00	33638.00	35320.00	
			32nd	7.5%	28928.00	36160.00	37968.00	
			33rd m	7.5%	31098.00	38873.00	40817.00	
			34th m	7.5%	33430.00	41788.00	43877.00	
			35th m	7.5%	35937.00	44921.00	47167.00	
			36th m	7.5%	38632.00	48290.00	50705.00	
			37th m	7.5%	41529.00	51911.00	54507.00	
			38th m	7.5%	44644.00	55805.00	58595.00	
			39th m	7.5%	47992.00	59990.00	62990.00	
			40th m	7.5%	51591.00	64489.00	67713.00	
			Total Cost from 30m upto 40m		380691.00	475865.00	499659.00	
			Avg Rate per metre		38069.00	47587.00	49966.00	
12.15 B		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	56750.00	68100.00	71505.00	
			32nd	10%	62425.00	74910.00	78656.00	
			33rd m	10%	68668.00	82402.00	86522.00	
			34th m	10%	75535.00	90642.00	95174.00	
			35th m	10%	83089.00	99707.00	104692.00	
			36th m	10%	91398.00	109678.00	115162.00	
			37th m	10%	100538.00	120646.00	126678.00	
			38th m	10%	110592.00	132710.00	139346.00	
			39th m	10%	121651.00	145981.00	153280.00	
			40th m	10%	133816.00	160579.00	168608.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Total Cost from 30m upto 40m		904462.00	1085355.00	1139623.00	
			Avg Rate per metre		90446.00	108536.00	113962.00	
12.15		C	Soft Rock (9m dia well)					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata up to 3m					
			Rate of sinking 0.15 m / hour					
			a) Labour					
			Mate	day	0.76	314.67	239.15	L-12
			Sinker (skilled)	day	4.00	414.80	1659.20	L-15
			Sinking helper (semi-skilled)	day	14.00	314.67	4405.38	L-14
			Diver	day	1.20	414.80	497.76	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1176.12	7644.78	P&M-90
			Air compressor with pneumatic breakers	hour	4.00	513.00	2052.00	P&M-78
			Consumables in sinking @ 10 per cent of (b)				969.68	
			Add for dewatering @ of 5 per cent of (a+b), if required				1746.79	
			c) Overhead charges @ 0.055 on (a+b)				1056.81	
			d) Contractor's profit @ 0.1 on (a+b+c)				2027.16	
			Rate per metre = (a+b+c+d)				22298.71	
						say	22299.00	
12.15		D	Hard Rock (9m dia well)					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking 0.15 m / hour					
			a) Material					
			Gelatine 80 per cent	Kg	10.00	120.72	1207.20	M-059
			Electric Detonators	each	40.00	5.75	229.83	M-058/100
			b) Labour					
			Mate	day	1.17	314.67	368.16	L-12
			Driller	day	2.00	314.67	629.34	L-06
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	22.00	300.36	6607.92	L-13
			Mazdoor (Skilled)	day	4.00	414.80	1659.20	L-15
			Diver	day	1.00	414.80	414.80	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	1176.12	8232.84	P&M-90
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.50	513.00	1282.50	P&M-78
			Dewatering @ 5 per cent of cost of (b+c), if required.				964.92	
			Consumables in sinking @ 10 per cent of cost of (b).				978.31	
			d) Overhead charges @ 0.055 on (a+b+c)				1247.33	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2392.61	
			Rate per metre = (a+b+c+d+e)				26318.67	
						say	26319.00	
12.16	1200		Sinking of 10 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.					
			Unit = Running Meter					
			Taking output = 1 m					
			Diameter of well - 10 m.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		A	Sandy Soil					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking 0.20 m / hour					
		a)	Labour					
			Mate	day	0.20	314.67	62.93	L-12
			Sinker (skilled)	day	1.50	414.80	622.20	L-15
			Sinking helper (semi-skilled)	day	3.50	314.67	1101.35	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1176.12	5880.60	P&M-90
			Consumables in sinking @10 per cent of (b)				588.06	
		c)	Overhead charges @ 0.055 on (a+b)				454.03	
		d)	Contractor's profit @ 0.1 on (a+b+c)				870.92	
			Rate per metre = (a+b+c+d)				9580.09	
						say	9580.00	
12.16 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking 0.17 m / hour					
		a)	Labour					
			Mate	day	0.31	314.67	97.55	L-12
			Sinker	day	2.00	414.80	829.60	L-15
			Sinking helper (semi-skilled)	day	4.25	314.67	1337.35	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	1176.12	6762.69	P&M-90
			Consumables in sinking @10 per cent of (b)				676.27	
		c)	Overhead charges @ 0.055 on (a+b)				533.69	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1023.71	
			Rate per metre = (a+b+c+d)				11260.86	
						say	11261.00	
12.16 A		(iii)	Beyond 10m upto 20m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	11824.00			
			12th m	5%	12415.00			
			13th m	5%	13036.00			
			14th m	5%	13688.00			
			15th m	5%	14372.00			
			16th m	5%	15091.00			
			17th m	5%	15846.00			
			18th m	5%	16638.00			
			19th m	5%	17470.00			
			20th m	5%	18344.00			
			Total Cost from 10m upto 20m		148724.00			
			Avg Rate per metre		14872.00			
12.16 A		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	19720.00	23664.00		
			22nd m	7.5%	21199.00	25439.00		
			23rd m	7.5%	22789.00	27347.00		
			24th m	7.5%	24498.00	29398.00		
			25th m	7.5%	26335.00	31602.00		
			26th m	7.5%	28310.00	33972.00		
			27th m	7.5%	30433.00	36520.00		
			28th m	7.5%	32715.00	39258.00		
			29th m	7.5%	35169.00	42203.00		
			30th m	7.5%	37807.00	45368.00		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Total Cost from 20m upto 30m		278975.00	334771.00		
			Avg Rate per metre		27898.00	33477.00		
12.16 A		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	41588.00	49906.00		
			32nd	10%	45747.00	54896.00		
			33rd m	10%	50322.00	60386.00		
			34th m	10%	55354.00	66425.00		
			35th m	10%	60889.00	73067.00		
			36th m	10%	66978.00	80374.00		
			37th m	10%	73676.00	88411.00		
			38th m	10%	81044.00	97253.00		
			39th m	10%	89148.00	106978.00		
			40th m	10%	98063.00	117676.00		
			Total Cost from 30m upto 40m		662809.00	795372.00		
			Avg Rate per metre		66281.00	79537.00		
12.16		B	Clayey Soil (10m dia. Well)					
			Unit = Running Meter					
			Taking output = 1 cum					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking 0.18m/hour.					
		a)	Labour					
			Mate	day	0.25	314.67	78.67	L-12
			Sinker (skilled)	day	2.50	414.80	1037.00	L-15
			Sinking helper (semi-skilled)	day	5.50	314.67	1730.69	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Consumables in sinking @ 10 per cent of (b)				705.67	
		c)	Overhead charges @ 0.055 on (a+b)				583.48	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1119.22	
			Rate per metre = (a+b+c+d)				12311.45	
						say	12311.00	
12.16 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking 0.15m/hour.					
		a)	Labour					
			Mate	day	0.40	314.67	125.87	L-12
			Sinker	day	3.00	414.80	1244.40	L-15
			Sinking helper (semi-skilled)	day	5.50	314.67	1730.69	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.00	513.00	2052.00	P&M-78
			Consumables in sinking @ 10 per cent of (b)				910.87	
		c)	Overhead charges @ 0.055 on (a+b)				721.63	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1384.22	
			Rate per metre = (a+b+c+d)				15226.39	
						say	15226.00	
12.16 B		(iii)	Beyond 10 m upto 20 m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if required		
			11th m	5%	15988.00	16787.00		
			12th m	5%	16787.00	17626.00		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			13th m	5%	17626.00	18507.00		
			14th m	5%	18507.00	19432.00		
			15th m	5%	19432.00	20404.00		
			16th m	5%	20404.00	21424.00		
			17th m	5%	21424.00	22495.00		
			18th m	5%	22495.00	23620.00		
			19th m	5%	23620.00	24801.00		
			20th m	5%	24801.00	26041.00		
			Total Cost from 10m upto 20m		201084.00	211137.00		
			Avg Rate per metre		20108.00	21114.00		
12.16 B		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	7.5%	26661.00	33326.00	34992.00	
			32nd	7.5%	28661.00	35826.00	37617.00	
			33rd m	7.5%	30811.00	38514.00	40440.00	
			34th m	7.5%	33122.00	41403.00	43473.00	
			35th m	7.5%	35606.00	44508.00	46733.00	
			36th m	7.5%	38276.00	47845.00	50237.00	
			37th m	7.5%	41147.00	51434.00	54006.00	
			38th m	7.5%	44233.00	55291.00	58056.00	
			39th m	7.5%	47550.00	59438.00	62410.00	
			40th m	7.5%	51116.00	63895.00	67090.00	
			Total Cost from 30m upto 40m		377183.00	471480.00	495054.00	
			Avg Rate per metre		37718.00	47148.00	49505.00	
12.16 B		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	56228.00	67474.00	70848.00	
			32nd	10%	61851.00	74221.00	77932.00	
			33rd m	10%	68036.00	81643.00	85725.15	
			34th m	10%	74840.00	89808.00	94298.40	
			35th m	10%	82324.00	98789.00	103728.45	
			36th m	10%	90556.00	108667.00	114100.35	
			37th m	10%	99612.00	119534.00	125510.70	
			38th m	10%	109573.00	131488.00	138062.40	
			39th m	10%	120530.00	144636.00	151867.80	
			40th m	10%	132583.00	159100.00	167055.00	
			Total Cost from 30m upto 40m		896133.00	1075360.00	1129128.25	
			Avg Rate per metre		89613.00	107536.00	112913.00	
12.16		C	Soft Rock (10m dia well)					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking 0.14m/hour.					
		a)	Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Sinker (skilled)	day	4.00	414.80	1659.20	L-15
			Sinking helper (semi-skilled)	day	16.00	314.67	5034.72	L-14
			Diver	day	1.40	414.80	580.72	L-07
		b)	Machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	1176.12	8232.84	P&M-90
			Air compressor with pneumatic breakers	hour	4.25	513.00	2180.25	P&M-78
			Consumables in sinking @ 10 per cent of (b)				1041.31	
			Add for dewatering @ 5 per cent of cost, if required				572.72	
			c) Overhead charges @ 0.055 on (a+b)				1076.48	
			d) Contractor's profit @ 0.1 on (a+b+c)				2064.89	
			Rate per metre = (a+b+c+d)				22713.74	
						<i>say</i>	22714.00	
12.16		D	Hard Rock (10m dia well)					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking 0.12 m/ hour.					
			a) Material					
			Gelatine 80 per cent	Kg	11.00	120.72	1327.92	M-059
			Electric Detonators	each.	44.00	5.75	252.82	M-058/100
			b) Labour					
			Mate	day	1.27	314.67	399.63	L-12
			Driller	day	2.00	314.67	629.34	L-06
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	24.00	300.36	7208.64	L-13
			Mazdoor (Skilled)	day	4.00	414.80	1659.20	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.50	1176.12	9997.02	P&M-90
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	513.00	1539.00	P&M-78
			Dewatering @ 5 per cent of cost (c), if required.				576.80	
			Consumables in sinking @ 10 per cent of cost of (b+c).				2211.33	
			d) Overhead charges @ 0.055 on (a+b+c)				1424.80	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2733.02	
			Rate per metre = (a+b+c+d+e)				30063.22	
						<i>say</i>	30063.00	
12.17	1200		Sinking of 11 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.					
			Unit = Running Meter					
			Taking output = 0.50 m					
			Diameter of well - 11 m.					
		A	Sandy Soil					
		(i)	Depth from bed level upto 3.0 M					
			Rate of sinking @ 0.15 m/hour					
			a) Labour					
			Mate	day	0.21	314.67	66.08	L-12
			Sinker (skilled)	day	1.50	414.80	622.20	L-15
			Sinking helper (semi-skilled)	day	3.30	314.67	1038.41	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Consumables in sinking @10 per cent of (b)				705.67	
			d) Overhead charges @ 0.055 on (a+b+c)				521.90	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1001.10	
			Cost for 0.5m = a+b+c+d				11012.08	
			Rate per metre = (a+b+c+d)/0.50				22024.16	
						<i>say</i>	22024.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.17 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.13 m/hour					
		a)	Labour					
			Mate	day	0.32	314.67	100.69	L-12
			Sinker	day	2.00	414.80	829.60	L-15
			Sinking helper (semi-skilled)	day	4.50	314.67	1416.02	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1176.12	4704.48	P&M-90
			Consumables in sinking @10 per cent of (b)				470.45	
		c)	Overhead charges @ 0.055 on (a+b+c)				413.67	
		d)	Contractor's profit @ 0.1 on (a+b+c+d)				793.49	
			Cost for 0.5m = a+b+c+d				8728.40	
			Rate per metre = (a+b+c+d)/0.50				17456.79	
						say	17457.00	
12.17 A		(iii)	Beyond 10m upto 20m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	18330.00			
			12th m	5%	19247.00			
			13th m	5%	20209.00			
			14th m	5%	21219.00			
			15th m	5%	22280.00			
			16th m	5%	23394.00			
			17th m	5%	24564.00			
			18th m	5%	25792.00			
			19th m	5%	27082.00			
			20th m	5%	28436.00			
			Total Cost from 10m upto 20m		230553.00			
			Avg Rate per metre		23055.00			
12.17 A		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	30569.00	36683.00		
			22nd m	7.5%	32862.00	39434.00		
			23rd m	7.5%	35327.00	42392.00		
			24th m	7.5%	37977.00	45572.00		
			25th m	7.5%	40825.00	48990.00		
			26th m	7.5%	43887.00	52664.00		
			27th m	7.5%	47179.00	56615.00		
			28th m	7.5%	50717.00	60860.00		
			29th m	7.5%	54521.00	65425.00		
			30th m	7.5%	58610.00	70332.00		
			Total Cost from 20m upto 30m		432474.00	518967.00		
			Avg Rate per metre		43247.00	51897.00		
12.17 A		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	64471.00	77365.00		
			32nd	10%	70918.00	85102.00		
			33rd m	10%	78010.00	93612.00		
			34th m	10%	85811.00	102973.00		
			35th m	10%	94392.00	113270.00		
			36th m	10%	103831.00	124597.00		
			37th m	10%	114214.00	137057.00		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			38th m	10%	125635.00	150762.00		
			39th m	10%	138199.00	165839.00		
			40th m	10%	152019.00	182423.00		
			Total Cost from 30m upto 40m		1027500.00	1233000.00		
			Avg Rate per metre		102750.00	123300.00		
12.17		B	Clayey Soil (11 m dia. Well)					
			Unit = Running Meter					
			Taking output = 0.50 meter					
		(i)	Depth from bed level upto 3.0 M					
			Rate of sinking @ 0.10 m/hour					
		a)	Labour					
			Mate	day	0.26	314.67	81.81	L-12
			Sinker (skilled)	day	2.50	414.80	1037.00	L-15
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1176.12	5880.60	P&M-90
			Consumables in sinking @ 10 per cent of (b)				588.06	
		c)	Overhead charges @ 0.055 on (a+b)				486.54	
		d)	Contractor's profit @ 0.1 on (a+b+c)				933.27	
			Cost for 0.5m = a+b+c+d				10265.96	
			Rate per metre = (a+b+c+d)/0.50				20531.92	
						say	20532.00	
12.17 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.08 m/hour					
		a)	Labour					
			Mate	day	0.43	314.67	135.31	L-12
			Sinker	day	3.50	414.80	1451.80	L-15
			Sinking helper (semi-skilled)	day	5.75	314.67	1809.35	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.25	513.00	2180.25	P&M-78
			Consumables in sinking @ 10 per cent of (b)				923.70	
		c)	Overhead charges @ 0.055 on (a+b)				745.64	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1430.28	
			Cost for 0.5m = a+b+c+d				15733.05	
			Rate per metre = (a+b+c+d)/0.50				31466.09	
						say	31466.00	
12.17 B		(iii)	Beyond 10 m upto 20 m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if required		
			11th m	5%	33039.00	34691.00		
			12th m	5%	34691.00	36426.00		
			13th m	5%	36426.00	38247.00		
			14th m	5%	38247.00	40159.00		
			15th m	5%	40159.00	42167.00		
			16th m	5%	42167.00	44275.00		
			17th m	5%	44275.00	46489.00		
			18th m	5%	46489.00	48813.00		
			19th m	5%	48813.00	51254.00		
			20th m	5%	51254.00	53817.00		
			Total Cost from 10m upto 20m		415560.00	436338.00		
			Avg Rate per metre		41556.00	43634.00		
12.17 B		(iv)	Beyond 20m upto 30 m					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	55098.00	68873.00	72317.00	
			22nd	7.5%	59230.00	74038.00	77740.00	
			23rd m	7.5%	63672.00	79590.00	83570.00	
			24th m	7.5%	68447.00	85559.00	89837.00	
			25th m	7.5%	73581.00	91976.00	96575.00	
			26th m	7.5%	79100.00	98875.00	103819.00	
			27th m	7.5%	85033.00	106291.00	111606.00	
			28th m	7.5%	91410.00	114263.00	119976.00	
			29th m	7.5%	98266.00	122833.00	128975.00	
			30th m	7.5%	105636.00	132045.00	138647.00	
			Total Cost from 20m upto 30m		779473.00	974343.00	1023060.00	
			Avg Rate per metre		77947.00	97434.00	102306.00	
12.17 B		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	116200.00	139440.00	146412.00	
			32nd	10%	127820.00	153384.00	161053.00	
			33rd m	10%	140602.00	168722.00	177158.00	
			34th m	10%	154662.00	185594.00	194874.00	
			35th m	10%	170128.00	204154.00	214362.00	
			36th m	10%	187141.00	224569.00	235797.00	
			37th m	10%	205855.00	247026.00	259377.00	
			38th m	10%	226441.00	271729.00	285315.00	
			39th m	10%	249085.00	298902.00	313847.00	
			40th m	10%	273994.00	328793.00	345233.00	
			Total Cost from 30m upto 40m		1851928	2222313	2333428	
			Avg Rate per metre		185193.00	222231.00	233343.00	
12.17		C	Soft Rock (11m dia well)					
			Unit = Running Meter.					
			Taking output = 0.50 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.06 m/hour					
		a)	Labour					
			Mate	day	0.95	314.67	298.94	L-12
			Sinker (skilled)	day	4.25	414.80	1762.90	L-15
			Sinking helper (semi-skilled)	day	18.00	314.67	5664.06	L-14
			Diver	day	1.50	414.80	622.20	L-07
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.00	1176.12	9408.96	P&M-90
			Air compressor with pneumatic breakers	hour	4.50	513.00	2308.50	P&M-78
			Consumables in sinking @ 10 per cent of (b)				1171.75	
			Add for dewatering @ 5 per cent of cost of (b), if required				644.46	
		c)	Overhead charges @ 0.055 on (a+b)				1203.50	
		d)	Contractor's profit @ 0.1 on (a+b+c)				2308.53	
			Cost for 0.5m = a+b+c+d				25393.79	
			Rate per metre = (a+b+c+d)/0.50				50787.57	
						say	50788.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.17		D	Hard Rock (11m dia well)					
			Unit = Running Meter.					
			Taking output = 0.50 m					
			Depth in hard rock upto 3 m					
			Rate of sinking @ 0.05 m/hour					
			a) Material					
			Gelatine 80 per cent	Kg	12.00	120.72	1448.64	M-059
			Electric Detonators	each.	48.00	5.75	275.80	M-058/100
			b) Labour					
			Mate	day	1.35	314.67	424.80	L-12
			Driller	day	2.00	314.67	629.34	L-06
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	26.00	300.36	7809.36	L-13
			Mazdoor (Skilled)	day	4.00	414.80	1659.20	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1176.12	11761.20	P&M-90
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.50	513.00	1795.50	P&M-78
			Dewatering @ 5 per cent of cost (c), if required.				677.84	
			Consumables in sinking @ 10 per cent of cost of (b+c).				2418.31	
			d) Overhead charges @ 0.055 on (a+b+c)				1595.20	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3059.89	
			Cost for 0.5m = a+b+c+d				33658.78	
			Rate per metre = (a+b+c+d)/0.50				67317.56	
						say	67318.00	
12.18	1200		Sinking of 12 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.					
			Unit = Running Meter					
			Taking output = 0.25 m					
			Diameter of well - 12 m.					
		A	Sandy Soil					
		(i)	I) Depth below bed level upto 3.0 M					
			Rate of sinking @ 0.05 m/hour					
			a) Labour					
			Mate	day	0.22	314.67	69.23	L-12
			Sinker (skilled)	day	1.75	414.80	725.90	L-15
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1176.12	7056.72	P&M-90
			Consumables in sinking @10 per cent of (b)				705.67	
			c) Overhead charges @ 0.055 on (a+b)				539.89	
			d) Contractor's profit @ 0.1 on (a+b+c)				1035.61	
			Cost for 0.25m = a+b+c+d				11391.70	
			Rate per metre = (a+b+c+d)/0.25				45566.80	
						say	45567.00	
12.18 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.038 m/hour					
			a) Labour					
			Mate	day	0.37	314.67	116.43	L-12
			Sinker	day	2.50	414.80	1037.00	L-15
			Sinking helper (semi-skilled)	day	4.75	314.67	1494.68	L-14
			b) Machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1176.12	7644.78	P&M-90
			Consumables in sinking @10 per cent of (b)				764.48	
			c) Overhead charges @ 0.055 on (a+b)				608.16	
			d) Contractor's profit @ 0.1 on (a+b+c)				1166.55	
			Cost for 0.25m = a+b+c+d				12832.08	
			Rate per metre = (a+b+c+d)/0.25				51328.30	
						say	51328.00	
12.18 A		(iii)	Beyond 10m upto 20m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	53894.00			
			12th m	5%	56589.00			
			13th m	5%	59418.00			
			14th m	5%	62389.00			
			15th m	5%	65508.00			
			16th m	5%	68783.00			
			17th m	5%	72222.00			
			18th m	5%	75833.00			
			19th m	5%	79625.00			
			20th m	5%	83606.00			
			Total Cost from 10m upto 20m		677867.00			
			Avg Rate per metre		67787.00			
12.18 A		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.			(a)	(b)Including 20% for Kentledge	
			21st m	7.5%	89876.00	107851.00		
			22nd m	7.5%	96617.00	115940.00		
			23rd m	7.5%	103863.00	124636.00		
			24th m	7.5%	111653.00	133984.00		
			25th m	7.5%	120027.00	144032.00		
			26th m	7.5%	129029.00	154835.00		
			27th m	7.5%	138706.00	166447.00		
			28th m	7.5%	149109.00	178931.00		
			29th m	7.5%	160292.00	192350.00		
			30th m	7.5%	172314.00	206777.00		
			Total Cost from 20m upto 30m		1271486.00	1525783.00		
			Avg Rate per metre		127149.00	152578.00		
12.18 A		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.			(a)	(b)Including 20% for Kentledge	
			31st m	10%	189545.00	227454.00		
			32nd	10%	208500.00	250200.00		
			33rd m	10%	229350.00	275220.00		
			34th m	10%	252285.00	302742.00		
			35th m	10%	277514.00	333017.00		
			36th m	10%	305265.00	366318.00		
			37th m	10%	335792.00	402950.00		
			38th m	10%	369371.00	443245.00		
			39th m	10%	406308.00	487570.00		
			40th m	10%	446939.00	536327.00		
			Total Cost from 30m upto 40m		3020869	3625043		
			Avg Rate per metre		302087.00	362504.00		
12.18		B	Clayey Soil (12 m dia. Well)					
			Unit = Running Meter.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			<i>Taking output = 0.25 meter.</i>					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking @ 0.04 m/hour					
		a)	Labour					
			Mate	day	0.30	314.67	94.40	L-12
			Sinker (skilled)	day	3.00	414.80	1244.40	L-15
			Sinking helper (semi-skilled)	day	4.50	314.67	1416.02	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	1176.12	7350.75	P&M-90
			Consumables in sinking @ 10 per cent of (b)				735.08	
		c)	Overhead charges @ 0.055 on (a+b)				596.24	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1143.69	
			Cost for 0.25m = a+b+c+d				12580.56	
			Rate per metre = (a+b+c+d)/0.25				50322.26	
						<i>say</i>	50322.00	
12.18 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.03 m/hour					
		a)	Labour					
			Mate	day	0.48	314.67	151.04	L-12
			Sinker	day	3.75	414.80	1555.50	L-15
			Sinking helper (semi-skilled)	day	6.00	314.67	1888.02	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	1176.12	9797.08	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	513.00	2308.50	P&M-78
			Consumables in sinking @ 10 per cent of (b)				1210.56	
		c)	Overhead charges @ 0.055 on (a+b)				930.09	
		d)	Contractor's profit @ 0.1 on (a+b+c)				1784.08	
			Cost for 0.25m = a+b+c+d				19624.87	
			Rate per metre = (a+b+c+d)/0.25				78499.47	
						<i>say</i>	78499.00	
12.18 B		(iii)	Beyond 10 m upto 20 m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if required		
			11th m	5%	82424.00	86545.00		
			12th m	5%	86545.00	90872.00		
			13th m	5%	90872.00	95416.00		
			14th m	5%	95416.00	100187.00		
			15th m	5%	100187.00	105196.00		
			16th m	5%	105196.00	110456.00		
			17th m	5%	110456.00	115979.00		
			18th m	5%	115979.00	121778.00		
			19th m	5%	121778.00	127867.00		
			20th m	5%	127867.00	134260.00		
			Total Cost from 10m upto 20m		1036720.00	1088556.00		
			Avg Rate per metre		103672.00	108856.00		
12.18 B		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	137457.00	171821.00	180412.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			22nd	7.5%	147766.00	184708.00	193943.00	
			23rd m	7.5%	158848.00	198560.00	208488.00	
			24th m	7.5%	170762.00	213453.00	224126.00	
			25th m	7.5%	183569.00	229461.00	240934.00	
			26th m	7.5%	197337.00	246671.00	259005.00	
			27th m	7.5%	212137.00	265171.00	278430.00	
			28th m	7.5%	228047.00	285059.00	299312.00	
			29th m	7.5%	245151.00	306439.00	321761.00	
			30th m	7.5%	263537.00	329421.00	345892.00	
			Total Cost from 20m upto 30m		1944611	2430764	2552303	
			Avg Rate per metre		194461.00	243076.00	255230.00	
12.18 B		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	289891.00	347869.00	365262.00	
			32nd	10%	318880.00	382656.00	401789.00	
			33rd m	10%	350768.00	420922.00	441968.00	
			34th m	10%	385845.00	463014.00	486165.00	
			35th m	10%	424430.00	509316.00	534782.00	
			36th m	10%	466873.00	560248.00	588260.00	
			37th m	10%	513560.00	616272.00	647086.00	
			38th m	10%	564916.00	677899.00	711794.00	
			39th m	10%	621408.00	745690.00	782975.00	
			40th m	10%	683549.00	820259.00	861272.00	
			Total Cost from 30m upto 40m		4620120	5544145	5821353	
			Avg Rate per metre		462012.00	554415.00	582135.00	
12.18		C	Soft Rock (12m dia well)					
			Unit = Running Meter					
			Taking output = 0.25 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.025 m/hour					
		a)	Labour					
			Mate	day	1.06	314.67	333.55	L-12
			Sinker (skilled)	day	4.50	414.80	1866.60	L-15
			Sinking helper (semi-skilled)	day	20.00	314.67	6293.40	L-14
			Diver	day	1.75	414.80	725.90	L-07
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1176.12	11761.20	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.75	513.00	2436.75	P&M-78
			Consumables in sinking @ 10 per cent of (b)				1419.80	
			Add for dewatering @ 5 per cent, if required				780.89	
		c)	Overhead charges @ 0.055 on (a+b)				1408.99	
		d)	Contractor's profit @ 0.1 on (a+b+c)				2702.71	
			Cost for 0.25m = a+b+c+d				29729.78	
			Rate per metre = (a+b+c+d)/0.25				118919.14	
						say	118919.00	
12.18		D	Hard Rock (12m dia well)					
			Unit = Running Meter					
			Taking output = 0.25 m					
		(i)	Depth in hard rock strata upto 3 m					
			Rate of sinking @ 0.020 m/hour					
		a)	Material					
			Gelatine80 per cent	Kg	14.00	120.72	1690.08	M-059

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Electric detonator	each.	56.00	5.75	321.76	M-058/100
			b) Labour					
			Mate	day	1.44	314.67	453.12	L-12
			Driller	day	2.00	314.67	629.34	L-06
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	28.00	300.36	8410.08	L-13
			Mazdoor (Skilled)	day	4.50	414.80	1866.60	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	12.50	1176.12	14701.50	P&M-90
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	4.00	513.00	2052.00	P&M-78
			Dewatering @ 5 per cent, if required.				837.68	
			Consumables in sinking @ 10 per cent of (c).				1759.12	
			d) Overhead charges @ 0.055 on (a+b+c)				1805.37	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3463.04	
			Cost for 0.25m = a+b+c+d+e				38093.39	
			Rate per metre = (a+b+c+d+e)/0.25				152373.57	
						say	152374.00	
12.19	1200		Sinking of Twin D Type well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.					
			Unit = Running Meter					
			Taking output = 1 m					
			Dimensions of well.					
			Overall length = 12 m					
			Overall width = 6 m					
		A	Sandy Soil					
		(i)	Depth from bed level upto 3.0 M					
			Rate of sinking @ 0.18 m/hour					
			a) Labour					
			Mate	day	0.20	314.67	62.93	L-12
			Sinker (skilled)	day	1.25	414.80	518.50	L-15
			Sinking helper (semi-skilled)	day	3.75	314.67	1180.01	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	1176.12	6468.66	P&M-90
			Consumables in sinking @10 per cent of (b)				646.87	
			c) Overhead charges @ 0.055 on (a+b)				488.23	
			d) Contractor's profit @ 0.1 on (a+b+c)				936.52	
			Rate per metre = (a+b+c+d)				10301.73	
						say	10302.00	
12.19 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.17 m/hour					
			a) Labour					
			Mate	day	0.30	314.67	94.40	L-12
			Sinker	day	1.50	414.80	622.20	L-15
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.88	1176.12	6915.59	P&M-90
			Consumables in sinking @10 per cent of (b)				691.56	
			c) Overhead charges @ 0.055 on (a+b)				527.03	
			d) Contractor's profit @ 0.1 on (a+b+c)				1010.95	
			Rate per metre = (a+b+c+d)				11120.40	
						say	11120.00	
12.19 A		(iii)	Beyond 10m upto 20m					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	11676.00			
			12th m	5%	12260.00			
			13th m	5%	12873.00			
			14th m	5%	13517.00			
			15th m	5%	14193.00			
			16th m	5%	14903.00			
			17th m	5%	15648.00			
			18th m	5%	16430.00			
			19th m	5%	17252.00			
			20th m	5%	18115.00			
			Total Cost from 10m upto 20m		146867.00			
			Avg Rate per metre		14687.00			
12.19 A		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	19474.00	23369.00		
			22nd m	7.5%	20935.00	25122.00		
			23rd m	7.5%	22505.00	27006.00		
			24th m	7.5%	24193.00	29032.00		
			25th m	7.5%	26007.00	31208.00		
			26th m	7.5%	27958.00	33550.00		
			27th m	7.5%	30055.00	36066.00		
			28th m	7.5%	32309.00	38771.00		
			29th m	7.5%	34732.00	41678.00		
			30th m	7.5%	37337.00	44804.00		
			Total Cost from 20m upto 30m		275505.00	330606.00		
			Avg Rate per metre		27551.00	33061.00		
12.19 A		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	41071.00	49285.00		
			32nd	10%	45178.00	54214.00		
			33rd m	10%	49696.00	59635.00		
			34th m	10%	54666.00	65599.00		
			35th m	10%	60133.00	72160.00		
			36th m	10%	66146.00	79375.00		
			37th m	10%	72761.00	87313.00		
			38th m	10%	80037.00	96044.00		
			39th m	10%	88041.00	105649.00		
			40th m	10%	96845.00	116214.00		
			Total Cost from 30m upto 40m		654574.00	785488.00		
			Avg Rate per metre		65457.00	78549.00		
12.19		B	Clayey Soil (Twin D Type Well)					
			Unit = Running Meter					
			Taking output = 1 meter					
		(i)	Depth below bed level upto 3.0 M					
			Rate of sinking @ 0.16 m/hour					
		a)	Labour					
			Mate	day	0.26	314.67	81.81	L-12
			Sinker (skilled)	day	2.50	414.80	1037.00	L-15
			Sinking helper (semi-skilled)	day	4.00	314.67	1258.68	L-14
		b)	Machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	1176.12	7350.75	P&M-90
			Consumables in sinking @ 10 per cent of (b)				735.08	
			c) Overhead charges @ 0.055 on (a+b)				575.48	
			d) Contractor's profit @ 0.1 on (a+b+c)				1103.88	
			Rate per metre = (a+b+c+d)				12142.68	
						say	12143.00	
12.19 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking @ 0.15 m/hour					
			a) Labour					
			Mate	day	0.45	314.67	141.60	L-12
			Sinker	day	3.25	414.80	1348.10	L-15
			Sinking helper (semi-skilled)	day	6.00	314.67	1888.02	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.67	1176.12	7844.72	P&M-90
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	513.00	2308.50	P&M-78
			Consumables in sinking @ 10 per cent of (b)				1015.32	
			c) Overhead charges @ 0.055 on (a+b)				800.04	
			d) Contractor's profit @ 0.1 on (a+b+c)				1534.63	
			Rate per metre = (a+b+c+d)				16880.94	
						say	16881.00	
12.19 B		(iii)	Beyond 10 m upto 20 m					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if required		
			11th m	5%	17725.00	18611.00		
			12th m	5%	18611.00	19542.00		
			13th m	5%	19542.00	20519.00		
			14th m	5%	20519.00	21545.00		
			15th m	5%	21545.00	22622.00		
			16th m	5%	22622.00	23753.00		
			17th m	5%	23753.00	24941.00		
			18th m	5%	24941.00	26188.00		
			19th m	5%	26188.00	27497.00		
			20th m	5%	27497.00	28872.00		
			Total Cost from 10m upto 20m		222943.00	234090.00		
			Avg Rate per metre		22294.00	23409.00		
12.19 B		(iv)	Beyond 20m upto 30 m					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	29559.00	36949.00	38796.00	
			22nd	7.5%	31776.00	39720.00	41706.00	
			23rd m	7.5%	34159.00	42699.00	44834.00	
			24th m	7.5%	36721.00	45901.00	48196.00	
			25th m	7.5%	39475.00	49344.00	51811.00	
			26th m	7.5%	42436.00	53045.00	55697.00	
			27th m	7.5%	45619.00	57024.00	59875.00	
			28th m	7.5%	49040.00	61300.00	64365.00	
			29th m	7.5%	52718.00	65898.00	69193.00	
			30th m	7.5%	56672.00	70840.00	74382.00	
			Total Cost from 20m upto 30m		418175.00	522720.00	548855.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Avg Rate per metre		41818.00	52272.00	54886.00	
12.19 B		(v)	Beyond 30m upto 40 m					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	62339.00	74807.00	78547.00	
			32nd	10%	68573.00	82288.00	86402.00	
			33rd m	10%	75430.00	90516.00	95042.00	
			34th m	10%	82973.00	99568.00	104546.00	
			35th m	10%	91270.00	109524.00	115000.00	
			36th m	10%	100397.00	120476.00	126500.00	
			37th m	10%	110437.00	132524.00	139150.00	
			38th m	10%	121481.00	145777.00	153066.00	
			39th m	10%	133629.00	160355.00	168373.00	
			40th m	10%	146992.00	176390.00	185210.00	
			Total Cost from 30m upto 40m		993521.00	1192225.00	1251836.00	
			Avg Rate per metre		99352.00	119223.00	125184.00	
12.19		C	Soft Rock (Twin D Type Well)					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.12 m/hour					
			a) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Sinker (skilled)	day	4.50	414.80	1866.60	L-15
			Sinking helper (semi-skilled)	day	15.00	314.67	4720.05	L-14
			Diver	day	1.50	414.80	622.20	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	1176.12	9797.08	P&M-90
			Air compressor with pneumatic breakers	hour	6.00	513.00	3078.00	P&M-78
			Consumables in sinking @ 10 per cent of (b)				1287.51	
			Add for dewatering @ 5 per cent, if required				708.13	
			c) Overhead charges @ 0.055 on (a+b)				1229.26	
			d) Contractor's profit @ 0.1 on (a+b+c)				2357.94	
			Rate per metre = (a+b+c+d)				25937.39	
						say	25937.00	
12.19		D	Hard Rock (Twin D Type Well)					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking @ 0.10 m/hour					
			a) Material					
			Geletine80 per cent	Kg	10.00	120.72	1207.20	M-059
			Electric detonators	each.	40.00	5.75	229.83	M-058/100
			b) Labour					
			Mate	day	1.34	314.67	421.66	L-12
			Driller	day	2.00	314.67	629.34	L-06
			Blaster	day	0.25	414.80	103.70	L-03
			Mazdoor	day	25.00	300.36	7509.00	L-13
			Mazdoor (Skilled)	day	4.25	414.80	1762.90	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1176.12	11761.20	P&M-90

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	513.00	1539.00	P&M-78
		Dewatering @ 5 per cent of cost of (b+c), if required.				1186.34	
		Consumables in sinking @ 10 per cent of (b).				1448.65	
		d) Overhead charges @ 0.055 on (a+b+c)				1528.94	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				2932.78	
		Rate per metre = (a+b+c+d+e)				32260.53	
					say	32261.00	
12.20	1200	Pneumatic sinking of wells with equipment of approved design, drawing and specifications worked by competent and trained personnel and comprising of compression and decompression chambers, reducers, two air locks separately for men and plant & materials, arrangement for supply of fresh air to working chambers, check valves, exhaust valves, shafts made from steel plates of riveted construction not less than 6 mm thick to withstand an air pressure of 0.50 MPa, controlled blasting of hard rock where required, staircases and 1 m wide landing platforms with railing, arrangement for compression and decompression, electric lighting of 50 V maximum, proper rooms for rest and medical examinations and compliance with safety precautions as per IS:4138, all as per clause 1207.6 of MoRTH Specifications.					
		Unit - 1 cum					
		Taking output = 5 cum					
		a) Material					
		M35 grade RCC corbel provided for supporting of equipment (Dimensions as per ground conditions). Rate may be adopted vide Item 12.8 (H)	Cum	8.00	3597.00	28776.00	Item 12.8 (H)
		HYSD bar reinforcement in corbel	tonne	0.48	55375.00	26580.00	M-051
		Blasting material					
		Gelatine 80 per cent	Kg	1.50	120.72	181.08	M-059
		Electric detonators	each	6.00	5.75	34.47	M-058/100
		b) Labour					
		Medical Officer	day	0.50	479.16	239.58	L-16
		Para medical personnel	day	1.00	414.80	414.80	L-19
		Mate	day	1.86	314.67	585.29	L-12
		Driller	day	1.00	314.67	314.67	L-06
		Blaster	day	0.50	414.80	207.40	L-03
		Mazdoor (for cutting, blasting, cleaning, removal of Material etc.)	day	30.00	300.36	9010.80	L-13
		Mazdoor (Skilled) (for fixation and removal of adopter for air lock, carrying out mechanical and electrical operations and repairs and other skilled jobs.)	day	10.00	414.80	4148.00	L-15
		Diver	day	4.00	414.80	1659.20	L-07
		c) Machinery					
		(i) Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	6.00	Value	#VALUE!	P&M-97
		Induction and deinduction	L.S			100000.00	
		Erection at site and commissioning	L.S			150000.00	
		Usage of plant and equipment for pneumatic method of well sinking	hour	6.00	3834.00	23004.00	P&M-60
		Air compressor 250 cfm, 2 nos.	hour	2 x 6	293.76	3525.12	P&M-032
		Hire and running charges of crane of 15 tonne capacity	hour	6.00	770.04	4620.24	P&M-87
		Motorised barge of 20 tonne capacity	hour	6.00	142.56	855.36	P&M-81
		Boat to carry atleast 20 persons	hour	6.00	142.56	855.36	P&M-81
		Electric generating set 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Tipper 10 tonne capacity	hour	6.00	1010.00	6060.00	P&M-13
			d) Overhead charges @ 0.055 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 5 cum = a+b+c+d+e (see notes below)				#VALUE!	
			Rate per cum = (a+b+c+d+e)/5				#VALUE!	
		Note	1.The cost of induction, deinduction and erection of equipment shall be divided by the total quantity of pneumatic sinking for all the wells of a particular bridge to arrive at the per cum rate on account of this item.					
			2.Cost of pneumatic sinking per cum of individual wells will be added to the cost indicated at (1) above to arrive at the final rate of pneumatic sinking per cum.					
			3.The cost of induction and deinduction will depend upon the distance involved for shifting of equipment which may be assessed in individual cases as per actual ground conditions at the time of making of cost estimates.					
			4.In case pneumatic sinking is involved on a dry bed, the provision of barge and boat may be omitted.					
			5.The necessity and dimensions of the corbel will be as per actual ground conditions.					
			6.Small equipments like welding sets, pumps, vibrators, pneumatic tools, portable lamps, fire extinguishers, hose pipes etc., have not been included as the same are covered as items of minor T&P under overhead charges.					
			7.Depth of sinking shall be restricted to 30 m.					
12.21	1207		Sand Filling in Wells complete as per Drawing and Technical Specifications.					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Sand (assuming 20 per cent voids)	cum	1.20	252.20	302.64	M-002
			b) Labour					
			Mate	day	0.01	314.67	3.15	L-12
			Mazdoor	day	0.30	300.36	90.11	L-13
			c) Overhead charges @ 0.055 on (a+b)				21.77	
			d) Contractor's profit @ 0.1 on (a+b+c)				41.77	
			Rate per cum (a+b+c+d)				459.44	
						say	459.00	
12.22	1200 & 1900		Providing Steel Liner 10 mm thick for Curbs and 6 mm thick for Steining of Wells including Fabricating and Setting out as per Detailed Drawing.					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			i) Structural steel including 5 per cent wastage	tonne	1.05	55000.00	57750.00	M-178
			b) Labour					
			Mate	day	1.24	314.67	390.19	L-12
			Fitter	day	6.00	414.80	2488.80	L-08
			Blacksmith	day	5.00	414.80	2074.00	L-01
			Welder	day	5.00	479.16	2395.80	L-02
			Mazdoor	day	10.00	300.36	3003.60	L-13
			Electrodes, cutting gas and other consumables @ 5 per cent on cost a (a) above.				2887.50	
			c) Overhead charges @ 0.055 on (a+b)				3904.44	
			d) Contractor's profit @ 0.1 on (a+b+c)				7489.43	
			Rate for per MT (a+b+c+d)				82383.77	
						say	82384.00	
12.23	1100 & 1700		Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.					
			Pile diameter-750 mm					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Unit = meter					
		Taking output = 15 m					
		a) Materials					
		PCC Grade M35	cum	6.62	4405.00	29161.10	Item 12.11 (C) iv
		Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
		Concrete to be cast with a tremie pipe 200mm dia.					
		b) Machinery(for boring and construction)					
		Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5023.08	30138.48	P&M-58
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	540.10	270.05	P&M-41
		Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
		Loader I cum bucket capacity.	hour	0.30	900.00	270.00	P&M-06
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	1010.00	303.00	P&M-13
		Bentonite	kg	300.00	2.96	888.00	M-103
		c) Labour					
		Mate/Supervisor	day	0.14	314.67	44.05	L-12
		Mazdoor	day	3.50	300.36	1051.26	L-13
		d) Overhead charges @ 0.055 on (b+c)				1813.07	
		e) Contractor's profit @ 0.1 on (b+c+d)				3477.79	
		Cost for 15 m = a+b+c+d+e				67416.80	
		Rate per metre (a+b+c+d+e)/15				4494.45	
					say	4494.00	
12.24	1100,1600 & 1700	Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.					
		Pile diameter-1000 mm					
		Unit = meter					
		Taking output = 10 m					
		a) Materials					
		PCC Grade M35	cum	7.85	4405.00	34579.25	Item 12.11 (C) iv
		Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
		Concrete to be cast with a tremie pipe 200mm dia.					
		b) Machinery(for boring and construction)					
		Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5023.08	30138.48	P&M-58
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	540.10	270.05	P&M-41
		Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
		Loader I cum bucket capacity.	hour	0.40	900.00	360.00	P&M-06
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.40	1010.00	404.00	P&M-13
		Bentonite	kg	350.00	2.96	1036.00	M-103
		c) Labour					
		Mate/Supervisor	day	0.16	314.67	50.35	L-12
		Mazdoor	day	4.00	300.36	1201.44	L-13
		d) Overhead charges @ 0.055 on (b+c)				1840.32	
		e) Contractor's profit @ 0.1 on (b+c+d)				3530.06	
		Cost for 10 m = a+b+c+d+e				73409.95	
		Rate per metre (a+b+c+d+e)/10				7340.99	
					say	7341.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.25	1100 & 1700		Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.					
			Pile diameter-1200 mm					
			Unit = meter					
			Taking output = 9 m					
			a) Materials					
			PCC Grade M35	cum	10.17	4405.00	44798.85	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			Concrete to be cast with a tremie pipe 200mm dia.					
			b) Machinery(for boring and construction)					
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5023.08	30138.48	P&M-58
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	540.10	270.05	P&M-41
			Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.50	900.00	450.00	P&M-06
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.50	1010.00	505.00	P&M-13
			Bentonite	kg	385.00	2.96	1139.60	M-103
			c) Labour					
			Mate/Supervisor	day	0.18	314.67	56.64	L-12
			Mazdoor	day	4.50	300.36	1351.62	L-13
			d) Overhead charges @ 0.055 on (b+c)				1865.13	
			e) Contractor's profit @ 0.1 on (b+c+d)				3577.65	
			Cost for 9 m = a+b+c+d+e				84153.02	
			Rate per metre (a+b+c+d+e)/9				9350.34	
						say	9350.00	
12.26	1100 & 1700		Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specification					
			Pile diameter - 750 mm					
			Unit = Running meter					
			Taking output = 40 metre					
			a) Materials					
			PCC Grade M35	cum	17.66	4405.00	77792.30	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.00	44.38	7100.80	M-106
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	43.00	3010.00	M-137
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	54.77	2738.50	M-173
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories..	hour	6.00	5023.08	30138.48	P&M-99
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	599.40	299.70	P&M-85
			d) Labour					
			Mate/Supervisor	day	0.12	314.67	37.76	L-12
			Mazdoor	day	3.00	300.36	901.08	L-13
			e) Overhead charges @ 0.055 on (b+c+d)				2432.45	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4665.88	
			Cost for 40 m = a+b+c+d+e				129116.94	
			Rate per metre (a+b+c+d+e)/40				3227.92	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						<i>say</i>	3228.00	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					
12.27	1100 & 1700		Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification					
			Pile diameter - 1000 mm					
			<i>Unit = Running meter</i>					
			<i>Taking output = 30 metre</i>					
			a) Materials					
			PCC Grade M35	cum	23.55	4405.00	103737.75	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.00	44.38	7100.80	M-106
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	43.00	3010.00	M-137
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	54.77	2738.50	M-173
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	5023.08	30138.48	P&M-99
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	599.40	299.70	P&M-85
			Hire and running charges for light crane for lowering reinforcement cage.	hour	0.50	540.10	270.05	P&M-41
			d) Labour					
			Mate/Supervisor	day	0.16	314.67	50.35	L-12
			Mazdoor	day	4.00	300.36	1201.44	L-13
			e) Overhead charges @ 0.055 on (b+c+d)				2464.51	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4727.38	
			Cost for 30 m = a+b+c+d+e				155738.96	
			Rate per metre (a+b+c+d+e)/30				5191.30	
						<i>say</i>	5191.00	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					
12.28	1100 & 1700		Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification					
			Pile diameter - 1200 mm					
			<i>Unit = Running meter</i>					
			<i>Taking output = 20 metre</i>					
			a) Materials					
			PCC Grade M35	cum	22.61	4405.00	99597.05	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			b) Materials Pile shoes					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			i) C.I. shoes for the pile	Kg	160.00	44.38	7100.80	M-106
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	43.00	3010.00	M-137
			iii) Steel helmet on top of casing head during driving	Kg	50.00	54.77	2738.50	M-173
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	5023.08	30138.48	P&M-99
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	599.40	299.70	P&M-85
			d) Labour					
			Mate/Supervisor	day	0.18	314.67	56.64	L-12
			Mazdoor	day	4.50	300.36	1351.62	L-13
			e) Overhead charges @ 0.055 on (b+c+d)				2458.27	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4715.40	
			Cost for 20 m = a+b+c+d+e				151466.46	
			Rate per metre (a+b+c+d+e)/20				7573.32	
						say	7573.00	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					
12.29	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification					
			Pile Diameter = 500 mm					
			Unit = Running Meter					
			Taking output = 60 m					
			a) Materials					
			RCC Grade M35	cum	11.78	4299.00	50642.22	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I Shoes	Kg	240.00	44.38	10651.20	M-106
			b) M.S. shoes	Kg	105.00	24.00	2520.00	M-138
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	54.77	1643.10	M-173
			c) Machinery					
			Crane 20 t capacity	hour	6.00	785.16	4710.96	P&M-88
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!	P&M-105
			d) Labour					
			Mate/Supervisor	day	0.12	314.67	37.76	L-12
			Mazdoor	day	3.00	300.36	901.08	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 60 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/60				#VALUE!	
						say	#VALUE!	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.30	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification					
			Pile Diameter = 750 mm					
			Unit = Running Meter					
			Taking output = 50 m					
			a) Materials					
			RCC Grade M35	cum	22.08	4299.00	94921.92	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I. shoes	Kg	160.00	44.38	7100.80	M-106
			b) M.S. shoes	Kg	70.00	24.00	1680.00	M-138
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	40.00	54.77	2190.80	M-173
			c) Machinery					
			Crane 40 T capacity	hour	6.00	1000.00	6000.00	P&M-89
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!	P&M-105
			d) Labour					
			Mate/Supervisor	day	0.16	314.67	50.35	L-12
			Mazdoor	day	4.00	300.36	1201.44	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 50 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/50				#VALUE!	
						say	#VALUE!	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.31	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification					
			Pile Diameter = 1000 mm					
			Unit = Running Meter					
			Taking output = 40 m					
			a) Materials					
			RCC Grade M35	cum	31.40	4299.00	134988.60	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I. shoes for the pile	Kg	160.00	44.38	7100.80	M-106
			b) M.S. shoes @ 35 Kg per pile of 15 m	Kg	70.00	24.00	1680.00	M-138
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	50.00	54.77	2738.50	M-173
			c) Machinery					
			Crane 50 t capacity.	hour	6.00	1176.12	7056.72	P&M-04
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!	P&M-105
			d) Labour					
			Mate/Supervisor	day	0.20	314.67	62.93	L-12
			Mazdoor	day	5.00	300.36	1501.80	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cost for 40 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/40				#VALUE!	
						say	#VALUE!	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.32	1100&1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification					
			Size of pile - 300 mm x 300 mm					
			Unit = Running Meter					
			Taking output = 60 m					
		a) Materials						
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)	cum	5.40	4299.00	23214.60	Item 12.11 (F) iv
		b) Material Pile shoes						
		a) C I shoes		kg	240.00	44.38	10651.20	M-106
		b) M. S shoes		kg	105.00	24.00	2520.00	M-138
		c) Steel helmet and cushion block on top of pile head during driving.		Kg	30.00	54.77	1643.10	M-173
		c) Machinery						
			Crane 10 tonne capacity	hour	6.00	627.48	3764.88	P&M-86
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!	P&M-105
		d) Labour						
			Mate/Supervisor	day	0.12	314.67	37.76	L-12
			Mazdoor	day	3.00	300.36	901.08	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
		e) Overhead charges @ 0.055 on (b+c+d)					#VALUE!	
		f) Contractor's profit @ 0.1 on (b+c+d+e)					#VALUE!	
			Cost for 60 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/60				#VALUE!	
						say	#VALUE!	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.33	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification					
			Size of pile - 500 mm x 500 mm					
			Unit = Running Meter					
			Taking output = 50 m					
		a) Materials						
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)	cum	12.50	4299.00	53737.50	Item 12.11 (F) iv
		b) Material Pile shoes						
		a) C I shoes		kg	160.00	44.38	7100.80	M-106
		b) M. S shoes		kg	70.00	24.00	1680.00	M-138
		c) Steel helmet and cushion block on top of pile head during driving.		Kg	30.00	54.77	1643.10	M-173
		c) Machinery						
			Crane 20 tonne capacity	hour	6.00	785.16	4710.96	P&M-88
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!	P&M-105
		d) Labour						
			Mate/Supervisor	day	0.16	314.67	50.35	L-12
			Mazdoor	day	4.00	300.36	1201.44	L-13

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 50 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/50				#VALUE!	
						say	#VALUE!	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.34	1100 & 1700		Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification					
			Size of pile - 750 mm x 750 mm					
			Unit = Running Meter					
			Taking output = 40 m					
			a) Materials					
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 13.11(F) (IV)	cum	22.50	4299.00	96727.50	Item 12.11 (F) iv
			b) Material					
			Pile shoes					
			a) C I shoes	kg	160.00	44.38	7100.80	M-106
			b) M. S shoes	kg	70.00	24.00	1680.00	M-138
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	54.77	1643.10	M-173
			c) Machinery					
			Crane 20 tonne capacity	hour	6.00	785.16	4710.96	P&M-88
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!	P&M-105
			d) Labour					
			Mate/Supervisor	day	0.18	314.67	56.64	L-12
			Mazdoor	day	4.50	300.36	1351.62	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.055 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 40 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/40				#VALUE!	
						say	#VALUE!	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.35	1100, 1900		Driven Vertical Steel Piles complete as per Drawing and & Technical Specification					
			Section of the pile - H Section steel column 400 x 250 mm (ISHB Series)					
			Unit = Running Meter					
			Taking output = 70 m					
			a) Materials					
			Structural steel including 5 per cent wastage @ 82.20 kg/m	tonnes	6.04	55000.00	332200.00	M-178
			b) Machinery					
			Crane 10 T capacity	hour	6.00	627.48	3764.88	P&M-86
			Vibrating Pile driving hammer complete with power unit and other accessories.	hour	6.00	Value	#VALUE!	P&M-105
			c) Labour					
			Mate/Supervisor	day	0.12	314.67	37.76	L-12
			Mazdoor	day	3.00	300.36	901.08	L-13

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 0.5 per cent of (a+b+c) for providing steel helmet on top of pile head during driving, stacking of piles at site, providing anti-corrosion treatment and other imponderables during installation.				#VALUE!	
			d) Overhead charges @ 0.055 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 70 m = a+b+c+d+e				#VALUE!	
			Rate per metre (a+b+c+d+e)/70				#VALUE!	
						say	#VALUE!	
12.36	1100 & 1900		Driven Vertical Steel Piles complete as per Drawing and Technical Specification					
			Section of the pile - H Section steel column 450 x 250 mm (ISHB Series)					
			Unit = Running Meter					
			Taking output = 60 m					
			a) Materials					
			Structural steel including 5 per cent wastage @92.50 kg/m	tonnes	5.83	55000.00	320650.00	M-178
			b) Machinery					
			Crane 10 T capacity	hour	6.00	627.48	3764.88	P&M-86
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	Value	#VALUE!	P&M-105
			c) Labour					
			Mate/Supervisor	day	0.14	314.67	44.05	L-12
			Mazdoor	day	3.50	300.36	1051.26	L-13
			Add 0.5 per cent of (a+b+c) for providing steel helmet and cushion block on top of pile head during driving, stacking of piles at site, providing anti-corrosive treatment and other imponderables during installation.				#VALUE!	
			d) Overhead charges @ 0.055 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 60 m = a+b+c+d+e				#VALUE!	
			Rate per metre (a+b+c+d+e)/60				#VALUE!	
						say	#VALUE!	
12.37	1100		Pile Load Test on single Vertical Pile in accordance with IS:2911(Part-IV)					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Initial and routine load test	tonne	1.00	300.00	300.00	
			b) Lateral load test	tonne	1.00	5000.00	5000.00	
		Note	Although, this item is incidental to work and is not required to be included in BOQ of contract, the same is required to be added in the estimate to assess cost of work.				5300.00	
12.38	1100, 1500 & 1700		Cement Concrete for Reinforced Concrete in Pile Cap complete as per Drawing and Technical Specification					
		A	RCC Grade M20					
			Unit = cum					
			Taking output = 15 cum					
		(i)	Using Concrete Mixer					
			a) Material					
			Cement	tonne	5.12	5000.00	25600.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	414.80	622.20	L-10

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor for concreting	day	20.00	300.36	6007.20	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator (capacity 33 KVA)	hour	6.00	342.36	2054.16	P&M-094(ii)
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2115.71	
			d) Overhead charges @ 0.055 on (a+b+c)				3025.47	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5803.40	
			Cost for 15 cum = a+b+c+d+e				63837.45	
			Rate per metre (a+b+c+d+e)/15				4255.83	
						say	4256.00	
12.38A		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
			a) Material					
			Cement	tonne	5.12	5000.00	25600.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.16	314.67	50.35	L-12
			Mason	day	0.38	414.80	157.62	L-10
			Mazdoor for concreting	day	2.50	300.36	750.90	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2400.00	1800.00	P&M-033
			Generator 100 KVA	hour	0.75	1925.00	1443.75	P&M-095
			Loader (capacity 1 cum)	hour	0.75	900.00	675.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	854.55	1709.10	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	4.32	162.00	Lead =1 km & P&M-69
			Concrete Pump	hour	0.75	234.36	175.77	P&M-037
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1934.99	
			d) Overhead charges @ 0.055 on (a+b+c)				2767.04	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5307.68	
			Cost for 15 cum = a+b+c+d+e				58384.45	
			Rate per metre (a+b+c+d+e)/15				3892.30	
						say	3892.00	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		B	RCC Grade M25					
			Unit = cum					
			Taking output = 15 cum					
		(i)	Using Concrete Mixer					
			a) Material					
			Cement	tonne	5.99	5000.00	29950.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	414.80	622.20	L-10
			Mazdoor for concreting	day	20.00	300.36	6007.20	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36	L-13
			c) Machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator (capacity 33 KVA)	hour	6.00	342.36	2054.16	P&M-094(ii)
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2289.71	
			d) Overhead charges @ 0.055 on (a+b+c)				3274.29	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6280.69	
			Cost for 15 cum = a+b+c+d+e				69087.55	
			Rate per metre (a+b+c+d+e)/15				4605.84	
						say	4606.00	
12.38B		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
			a) Material					
			Cement	tonne	5.99	5000.00	29950.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.16	314.67	50.35	L-12
			Mason	day	0.38	414.80	157.62	L-10
			Mazdoor for concreting	day	2.50	300.36	750.90	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2400.00	1800.00	P&M-033
			Generator 125 KVA	hour	0.75	2640.00	1980.00	P&M-007
			Loader (capacity 1 cum)	hour	0.75	900.00	675.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	854.55	1709.10	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	4.32	162.00	Lead =1 km & P&M-69
			Concrete Pump	hour	0.75	234.36	175.77	P&M-037
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2130.44	
			d) Overhead charges @ 0.055 on (a+b+c)				3046.53	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5843.80	
			Cost for 15 cum = a+b+c+d+e				64281.76	
			Rate per metre (a+b+c+d+e)/15				4285.45	
						say	4285.00	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		C	RCC Grade M30					
			Unit = cum					
			Taking output = 15 cum					
		(i)	Using Concrete Mixer					
			a) Material					
			Cement	tonne	6.10	5000.00	30500.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	414.80	622.20	L-10
			Mazdoor for concreting	day	20.00	300.36	6007.20	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator (capacity 33 KVA)	hour	6.00	342.36	2054.16	P&M-094(ii)
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2311.71	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Overhead charges @ 0.055 on (a+b+c)				3305.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6341.03	
			Cost for 15 cum = a+b+c+d+e				69751.35	
			Rate per metre (a+b+c+d+e)/15				4650.09	
						<i>say</i>	4650.00	
*12.38C		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
			a) Material					
			Cement	tonne	6.10	5000.00	30500.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.16	314.67	50.35	L-12
			Mason	day	0.38	414.80	157.62	L-10
			Mazdoor for concreting	day	2.50	300.36	750.90	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2400.00	1800.00	P&M-033
			Generator 100 KVA	hour	0.75	1925.00	1443.75	P&M-095
			Loader (capacity 1 cum)	hour	0.75	900.00	675.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	854.55	1709.10	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	4.32	162.00	Lead =1 km & P&M-69
			Concrete Pump	hour	0.75	234.36	175.77	P&M-037
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2130.99	
			d) Overhead charges @ 0.055 on (a+b+c)				3047.32	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5845.31	
			Cost for 15 cum = a+b+c+d+e				64298.36	
			Rate per metre (a+b+c+d+e)/15				4286.56	
						<i>say</i>	4287.00	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		D	RCC Grade M35					
			Unit = cum					
			Taking output = 15 cum					
		(i)	Using Concrete Mixer					
			a) Material					
			Cement	tonne	6.33	5000.00	31650.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	414.80	622.20	L-10
			Mazdoor	day	20.00	300.36	6007.20	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator (capacity 33 KVA)	hour	6.00	342.36	2054.16	P&M-094(ii)
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2357.71	
			d) Overhead charges @ 0.055 on (a+b+c)				3371.53	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6467.21	
			Cost for 15 cum = a+b+c+d+e				71139.31	
			Rate per metre (a+b+c+d+e)/15				4742.62	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						<i>say</i>	4743.00	
'12.38D		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
			a) Material					
			Cement	tonne	6.33	5000.00	31650.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.16	314.67	50.35	L-12
			Mason	day	0.38	414.80	157.62	L-10
			Mazdoor for concreting	day	2.50	300.36	750.90	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	300.36	300.36	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2400.00	1800.00	P&M-033
			Generator 125 KVA	hour	0.75	2640.00	1980.00	P&M-007
			Loader (capacity 1 cum)	hour	0.75	900.00	675.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	854.55	1709.10	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	4.32	162.00	Lead =1 km & P&M-69
			Concrete Pump	hour	0.75	234.36	175.77	P&M-037
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2198.44	
			d) Overhead charges @ 0.055 on (a+b+c)				3143.77	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6030.32	
			Cost for 15 cum = a+b+c+d+e				66333.52	
			Rate per metre (a+b+c+d+e)/15				4422.23	
						<i>say</i>	4422.00	
12.39	1100&1700		Levelling Course for Pile cap					
			Providing and laying of PCC M15 levelling course 100mm thick below the pile cap.					
			<i>Unit = cum</i>					
			<i>Taking output = 15 cum</i>					
			a) Material					
			Cement	tonne	4.13	5000.00	20650.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			40 mm aggregate	cum	8.10	999.65	8097.17	M-042
			20 mm Aggregate	cum	4.05	1110.00	4495.50	M-041
			10 mm Aggregate	cum	1.35	899.36	1214.14	M-039
			b) Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	414.80	622.20	L-10
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			d) Overhead charges @ 0.055 on (a+b+c)				2617.40	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5020.66	
			Cost for 15 cum = a+b+c+d+e				55227.23	
			Rate per metre (a+b+c+d+e)/15				3681.82	
						<i>say</i>	3682.00	
12.40	1600		Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.					
			<i>Unit = 1 MT</i>					
			<i>Taking output = 1 MT</i>					
			a) Material					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	55375.00	58143.75	M-051
			Binding wire	Kg	6.00	62.00	372.00	M-214
			b) Labour for cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.40	314.67	125.87	L-12
			Blacksmith	day	2.00	479.16	958.32	L-02
			Mazdoor	day	6.00	300.36	1802.16	L-13
			c) Overhead charges @ 0.055 on (a+b)				3377.12	
			d) Contractor's profit @ 0.1 on (a+b+c)				6477.92	
			Rate per MT (a+b+c+d)				71257.13	
						say	71257.00	
12.41	1600		Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			MS bars including 5 per cent overlaps and wastage	tonne	1.05	44000.00	46200.00	M-062
			Binding wire	Kg	6.00	62.00	372.00	M-214
			b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.43	314.67	135.31	L-12
			Blacksmith	day	2.25	479.16	1078.11	L-02
			Mazdoor	day	6.50	300.36	1952.34	L-13
			c) Overhead charges @ 0.055 on (a+b)				2735.58	
			d) Contractor's profit @ 0.1 on (a+b+c)				5247.33	
			Rate for per MT (a+b+c+d)				57720.67	
						say	57721.00	

CHAPTER-13
SUB-STRUCTURE

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.1	1300 & 2200	Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and Technical Specifications					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Bricks 1st class	each	500.00	7.00	3500.00	M-014
		Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	0.24	3098.00	743.52	Item 12.6 (A)
		b) Labour					
		Mate	day	0.06	314.67	18.88	L-12
		Mason	day	0.80	479.16	383.33	L-11
		Mazdoor	day	0.80	300.36	240.29	L-13
		Add for scaffolding @ 5 per cent of cost of material and labour				244.30	
		c) Overhead charges @ 0.055 on (a+b)				282.17	
		d) Contractor's profit @ 0.1 on (a+b+c)				541.25	
		Rate per cum (a+b+c+d)				5953.73	
					say	5954.00	
13.2	1300 & 2200	Pointing with cement mortar (1:3) on brick work in substructure as per Technical Specifications					
		<i>Unit = 10 sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Material					
		Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.03	3098.00	92.94	Item 12.6 (A)
		b) Labour					
		Mate	day	0.04	314.67	12.59	L-12
		Mason	day	0.50	479.16	239.58	L-11
		Mazdoor	day	0.50	300.36	150.18	L-13
		c) Overhead charges @ 0.055 on (a+b)				27.24	
		d) Contractor's profit @ 0.1 on (a+b+c)				52.25	
		Rate per 10 sqm (a+b+c+d)				574.78	
					say	575.00	
	Note	Scaffolding is already included in item 13.1					
13.3	1300 & 2200	Plastering with cement mortar (1:3) on brick work in sub structure as per Technical Specifications					
		<i>Unit = 10 sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Material					
		Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.144	3098.00	446.11	Item 12.6 (A)
		b) Labour					
		Mate	day	0.04	314.67	12.59	L-12
		Mason	day	0.50	479.16	239.58	L-11
		Mazdoor	day	0.50	300.36	150.18	L-13
		c) Overhead charges @ 0.055 on (a+b)				46.67	
		d) Contractor's profit @ 0.1 on (a+b+c)				89.51	
		Rate per 10 sqm (a+b+c+d)				984.64	
					say	985.00	
	Note	1.Scaffolding is already included in item no. 13.1					
		2.The number of masons and Mazdoors already catered in the cement mortar have been taken into account while providing these categories in brick masonry, pointing and plastering.					
13.4	1400 & 2200	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications					
		A Random Rubble Masonry					
		(coursed/uncoursed)					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Stone	cum	1.00	340.55	340.55	M-067
		Through and bond stone	No	7.00	7.00	49.00	M-180
		(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
		Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	3098.00	1022.34	Item 12.6 (A)
		b) Labour					
		Mate	day	0.10	314.67	31.47	L-12
		Mason	day	1.20	479.16	574.99	L-11
		Mazdoor	day	1.20	300.36	360.43	L-13
		Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				118.94	
		c) Overhead charges @ 0.055 on (a+b)				137.37	
		d) Contractor's profit @ 0.1 on (a+b+c)				263.51	
		Rate per cum (a+b+c+d)				2898.60	
					say	2899.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.4		B	Coursed rubble masonry (first sort)					
			Unit = cum					
			Taking output = 1 cum					
		a)	Material					
			Stone	cum	1.10	340.55	374.61	M-067
			Through and bond stone	each	7.00	7.00	49.00	M-180
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.30	3098.00	929.40	Item 12.6 (A)
		b)	Labour					
			Mate	day	0.12	314.67	37.76	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	1.50	300.36	450.54	L-13
			Add for scaffolding @ 5 per cent of cost of material and labour				128.00	
		c)	Overhead charges @ 0.055 on (a+b)				147.84	
		d)	Contractor's profit @ 0.1 on (a+b+c)				283.59	
			Rate per cum (a+b+c+d)				3119.48	
						say	3119.00	
13.4		C	Ashlar masonry (first sort)					
			Plain ashlar					
			Unit = cum					
			Taking output = 1 cum					
		a)	Material					
			Stone	cum	1.11	340.54	378.00	M-074
			Through and bond stone	each	7.00	7.00	49.00	M-180
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	3098.00	1022.34	Item 12.6 (A)
		b)	Labour for masonry work					
			Mate	day	0.20	314.67	62.93	L-12
			Mason	day	2.50	479.16	1197.90	L-11
			Mazdoor	day	2.50	300.36	750.90	L-13
			Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				173.05	
		c)	Overhead charges @ 0.055 on (a+b)				199.88	
		d)	Contractor's profit @ 0.1 on (a+b+c)				383.40	
			Rate per cum (a+b+c+d)				4217.40	
						say	4217.00	
	Note		The labour already considered in the cement mortar have been taken into account while providing these categories in the stone masonry works.					
13.5	1500, 1700 & 2200		Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications					
			Unit = cum					
			Taking output = 1 cum					
		A	PCC Grade M15					
		(p)	Height upto 5m					
			Same as Item 12.8 (A) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (A)				3187.00	Item 12.8 (A)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		318.70	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				192.81	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				369.85	
			Rate per cum (a+b+c+d+e+f)				4068.36	
						say	4068.00	
13.5		B	PCC Grade M20					
		(p)	Height upto 5m					
			Same as Item 12.8 (B) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (B)				3524.00	Item 12.8 (B) PCC
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		352.40	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				213.20	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				408.96	
			Rate per cum (a+b+c+d+e+f)				4498.56	
						say	4499.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5		C	PCC Grade M25					
		(p)	Height upto 5m					
			Same as Item 12.8 (D) upto 5 m height with the only change that the provision of form work shall be 10 per cent instead of 3.75 per cent of cost of material, labour and machinery.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				3800.00	Item 12.8 (D)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		380.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				229.90	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				440.99	
			Rate per cum (a+b+c+d+e+f)				4850.89	
						say	4851.00	
13.5 C		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
(p)			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				3482.00	Item 12.8 (D)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		348.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				210.66	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				404.09	
			Rate per cum (a+b+c+d+e+f)				4444.95	
						say	4445.00	
13.5 C		(q)	Height 5m to 10m					
			Same as Item 12.8 (D) with the following changes: (i) Add 2 per cent of cost of material, Labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 12 per cent instead of 3.75 per cent of cost of material, labour and machinery					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				3800.00	Item 12.8 (D)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		456.00	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		76.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				238.26	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				457.03	
			Rate per cum (a+b+c+d+e+f)				5027.29	
						say	5027.00	
13.5 C		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
(q)			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				3482.00	Item 12.8 (D)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		417.84	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		69.64	
			e) Overhead charges @ 0.055 on (a+b+c+d)				218.32	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				418.78	
			Rate per cum (a+b+c+d+e+f)				4606.58	
						say	4607.00	
13.5 C		(r)	Height above 10m					
			Same as Item 12.8 (D) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 3.75 per cent of cost of material, labour and machinery.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				3800.00	Item 12.8 (D)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		570.00	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		152.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				248.71	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				477.07	
			Rate per cum (a+b+c+d+e+f)				5247.78	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	<u>5248.00</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5 C (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				3482.00	Item 12.8 (D)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		522.30	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		139.28	
			e) Overhead charges @ 0.055 on (a+b+c+d)				227.90	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				437.15	
			Rate per cum (a+b+c+d+e+f)				4808.62	
						say	4809.00	
13.5		D	PCC Grade M30					
		(p)	Height upto 5m					
			Same as Item 12.8 (F) upto 5 m height with the only change that the provision of form work shall be 10 per cent instead of 3.50 per cent of cost of material, labour and machinery.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				3830.00	Item 12.8 (F)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		383.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				231.72	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				444.47	
			Rate per cum (a+b+c+d+e+f)				4889.19	
						say	4889.00	
13.5 D (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				3509.00	Item 12.8 (F)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		350.90	
			e) Overhead charges @ 0.055 on (a+b+c+d)				212.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				407.22	
			Rate per cum (a+b+c+d+e+f)				4479.41	
						say	4479.00	
13.5 D		(q)	Height 5m to 10m					
			Same as Item 12.8 (F) with the following changes: (i) Add 2 per cent of cost of material, Labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 12 per cent instead of 3.50 per cent of cost of material, labour and machinery.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				3830.00	Item 12.8 (F)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		459.60	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		76.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				240.14	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				460.63	
			Rate per cum (a+b+c+d+e+f)				5066.98	
						say	5067.00	
13.5 D (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				3509.00	Item 12.8 (F)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		421.08	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		70.18	
			e) Overhead charges @ 0.055 on (a+b+c+d)				220.01	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				422.03	
			Rate per cum (a+b+c+d+e+f)				4642.30	
						say	4642.00	
13.5 D		(r)	Height above 10m					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Same as Item 12.8 (F) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 3.50 per cent of cost of material, labour and machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				3830.00	Item 12.8 (F)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		574.50	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		153.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				250.67	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				480.84	
			Rate per cum (a+b+c+d+e+f)				5289.21	
						say	5289.00	
13.5 D (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				3509.00	Item 12.8 (F)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		526.35	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		140.36	
			e) Overhead charges @ 0.055 on (a+b+c+d)				229.66	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				440.54	
			Rate per cum (a+b+c+d+e+f)				4845.91	
						say	4846.00	
13.5		E	RCC Grade M20					
		(p)	Height upto 5m					
			Same as Item 12.8 (C) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				3542.00	Item 12.8 (C)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		354.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				214.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				411.05	
			Rate per cum (a+b+c+d+e+f)				4521.54	
						say	4522.00	
13.5 E (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				3222.00	Item 12.8 (C)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		322.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				194.93	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				373.91	
			Rate per cum (a+b+c+d+e+f)				4113.04	
						say	4113.00	
13.5 E		(q)	Height 5m to 10m					
			For height, upto 10m, add 2 per cent of cost as above excluding formwork. For cost of formwork add 12 per cent of cost of material, labour and machinery instead of 4 per cent.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				3542.00	Item 12.8 (C)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		425.04	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		70.84	
			e) Overhead charges @ 0.055 on (a+b+c+d)				222.08	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				426.00	
			Rate per cum (a+b+c+d+e+f)				4685.96	
						say	4686.00	
13.5 E (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				3222.00	Item 12.8 (C)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		386.64	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		64.44	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e)	Overhead charges @ 0.055 on (a+b+c+d)				202.02	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				387.51	
			Rate per cum (a+b+c+d+e+f)				4262.61	
						say	<u>4263.00</u>	
13.5 E		(r)	Height above 10m					
			Same as Item 12.8 (C) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 4 per cent of cost of material, labour and machinery.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				3542.00	Item 12.8 (C)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		531.30	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		141.68	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				231.82	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				444.68	
			Rate per cum (a+b+c+d+e+f)				4891.48	
						say	<u>4891.00</u>	
13.5 E		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
(r)			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				3222.00	Item 12.8 (C)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		483.30	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		128.88	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				210.88	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				404.51	
			Rate per cum (a+b+c+d+e+f)				4449.57	
						say	<u>4450.00</u>	
13.5		F	RCC Grade M25					
		(p)	Height upto 5m					
			Same as Item 12.8 (E) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3.75 per cent .					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I				3822.00	Item 12.8 (E)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		382.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				231.23	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				443.54	
			Rate per cum (a+b+c+d+e+f)				4878.97	
						say	<u>4879.00</u>	
13.5 F		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
(p)			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				3503.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		350.30	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				211.93	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				406.52	
			Rate per cum (a+b+c+d+e+f)				4471.75	
						say	<u>4472.00</u>	
13.5 F		(q)	Height 5m to 10m					
			For height, upto 10m, add 1.8 per cent of cost as above excluding formwork. For cost of formwork add 11.8 per cent of cost of material, labour and machinery					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I				3822.00	Item 12.8 (E)
			d) formwork					
			Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.80		451.00	
			Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.80		68.80	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Overhead charges @ 0.055 on (a+b+c+d)				238.80	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				458.06	
			Rate per cum (a+b+c+d+e+f)				5038.65	
						say	5039.00	
13.5 F (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				3503.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.80		413.35	
			Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.80		63.05	
			e) Overhead charges @ 0.055 on (a+b+c+d)				218.87	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				419.83	
			Rate per cum (a+b+c+d+e+f)				4618.10	
						say	4618.00	
13.5 F		(r)	Height above 10m					
			For height, above 10m, add 4 per cent of cost as above excluding formwork. For cost of formwork add 15 per cent of cost of material, labour and machinery					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I				3822.00	Item 12.8 (E)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		573.30	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		152.88	
			e) Overhead charges @ 0.055 on (a+b+c+d)				250.15	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				479.83	
			Rate per cum (a+b+c+d+e+f)				5278.16	
						say	5278.00	
13.5 F (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				3503.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		525.45	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		140.12	
			e) Overhead charges @ 0.055 on (a+b+c+d)				229.27	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				439.78	
			Rate per cum (a+b+c+d+e+f)				4837.63	
						say	4838.00	
13.5		G	RCC Grade M30					
		(p)	Height upto 5m					
			Same as Item 12.8 (G) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3.5 per cent.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I				3839.00	Item 12.8 (G)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		383.90	
			e) Overhead charges @ 0.055 on (a+b+c+d)				232.26	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				445.52	
			Rate per cum (a+b+c+d+e+f)				4900.68	
						say	4901.00	
13.5 G (p)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				3520.00	Item 12.8 (G)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		352.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				212.96	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				408.50	
			Rate per cum (a+b+c+d+e+f)				4493.46	
						say	4493.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5 G		(q)	Height 5m to 10m					
			For height, upto 10m, add 1.6 per cent of cost as above excluding formwork. For cost of formwork add 11.5 per cent of cost of material, labour and machinery					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I				3839.00	Item 12.8 (G)
			d) formwork					
			Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.50		441.49	
			Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.60		61.42	
			e) Overhead charges @ 0.055 on (a+b+c+d)				238.80	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				458.07	
			Rate per cum (a+b+c+d+e+f)				5038.79	
						say	5039.00	
13.5 G		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				3520.00	Item 12.8 (G)
			d) formwork					
			Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.50		404.80	
			Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.60		56.32	
			e) Overhead charges @ 0.055 on (a+b+c+d)				218.96	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				420.01	
			Rate per cum (a+b+c+d+e+f)				4620.09	
						say	4620.00	
13.5 G		(r)	Height above 10m					
			For height, above 10m, add 3.5 per cent of cost as above excluding formwork. For cost of formwork add 14 per cent of cost of material, labour and machinery					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I				3839.00	Item 12.8 (G)
			d) formwork					
			Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.00		537.46	
			Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.50		134.37	
			e) Overhead charges @ 0.055 on (a+b+c+d)				248.10	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				475.89	
			Rate per cum (a+b+c+d+e+f)				5234.81	
						say	5235.00	
13.5 G		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				3520.00	Item 12.8 (G)
			d) formwork					
			Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.00		492.80	
			Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.50		123.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				227.48	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				436.35	
			Rate per cum (a+b+c+d+e+f)				4799.83	
						say	4800.00	
13.5		H	RCC Grade M35					
		(p)	Height upto 5m					
			Same as Item 12.8 (H) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3 per cent.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I				3916.00	Item 12.8 (H) Case I
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		391.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				236.92	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				454.45	
			Rate per cum (a+b+c+d+e+f)				4998.97	
						say	4999.00	
13.5 H		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				3658.00	Item 12.8 (H)

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) formwork					DIR used item
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		365.80	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e)	Overhead charges @ 0.055 on (a+b+c+d)				221.31	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				424.51	
			Rate per cum (a+b+c+d+e+f)				4669.62	
						say	<u>4670.00</u>	
13.5 H		(q)	Height 5m to 10m				<u>5412.00</u>	
			For height, upto 10m, add 1.4 per cent of cost as above excluding formwork. For cost of formwork add 11 per cent of cost of material, labour and machinery.					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I				3916.00	Item 12.8 (H) Case I
			d) formwork					
			Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.00		430.76	
			Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.40		54.82	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				242.09	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				464.37	
			Rate per cum (a+b+c+d+e+f)				5108.04	
						say	<u>5108.00</u>	
13.5 H (q)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				3658.00	Item 12.8 (H)
			d) formwork					
			Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.00		402.38	
			Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.40		51.21	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				226.14	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				433.77	
			Rate per cum (a+b+c+d+e+f)				4771.50	
						say	<u>4772.00</u>	
13.5 H		(r)	Height above 10m				<u>5530.00</u>	
			For height, above 10m, add 3 per cent of cost as above excluding formwork. For cost of formwork add 13 per cent of cost of material, labour and machinery					
		Case I	Using concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I				3916.00	Item 12.8 (H) Case I
			d) formwork					
			Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.00		509.08	
			Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.00		117.48	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				249.84	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				479.24	
			Rate per cum (a+b+c+d+e+f)				5271.64	
						say	<u>5272.00</u>	
13.5 H (r)		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				3658.00	Item 12.8 (H)
			d) formwork					
			Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.00		475.54	
			Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.00		109.74	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				233.38	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				447.67	
			Rate per cum (a+b+c+d+e+f)				4924.33	
						say	<u>4924.00</u>	
							<u>5707.00</u>	
	Note		The basic components of this analysis are the same as those of items 13.8 (A to H). The only changes are as under:					
		a)	Ramps/Stairs: Extra expenditure on structures which are more than 5 m high @ 2 per cent of cost for height upto 10 m and 4 per cent for heights above 10 m will be involved for approaching the work spot by providing higher ramp/stair case for use by the working parties.					
		b)	The above mentioned percentages have been suitably modified for different categories as cost for various categories varies, whereas effort for access for same height will be similar. As the cost of richer concrete is comparatively more, the percentage to be added has been reduced to maintain the same cost for extra efforts.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.6	Section 1600 & 2200		Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Output: MT					
		Taking output = 1 MT					
		a) Material					
		HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	55375.00	58143.75	M-051
		Binding wire	kg	6.00	62.00	372.00	M-214
		b) Labour for cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.34	314.67	106.99	L-12
		Blacksmith	day	2.00	479.16	958.32	L-02
		Mazdoor	day	6.50	300.36	1952.34	L-13
		c) Overhead charges @ 0.055 on (a+b)				3384.34	
		d) Contractor's profit @ 0.1 on (a+b+c)				6491.77	
		Rate for per MT (a+b+c+d)				71409.51	
					say	<u>71410.00</u>	
13.7	1600 & 2200	Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and Technical Specification					
		Unit = MT					
		Taking output = 1 MT					
		a) Material					
		MS bars including 5 per cent overlaps and wastage	tonne	1.05	44000.00	46200.00	M-062
		Binding wire	kg	6.00	62.00	372.00	M-214
		b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.28	314.67	88.11	L-12
		Blacksmith	day	1.50	479.16	718.74	L-02
		Mazdoor	day	5.50	300.36	1651.98	L-13
		c) Overhead charges @ 0.055 on (a+b)				2696.70	
		d) Contractor's profit @ 0.1 on (a+b+c)				5172.75	
		Rate for per MT (a+b+c+d)				56900.28	
					say	<u>56900.00</u>	
13.8	2706 & 2200	Providing weep holes in Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing face. Complete as per drawing and Technical Specifications					
		Unit = Nos.					
		Taking output = 30 Nos.					
		a) Material					
		AC pipe 100 mm dia. (including wastage @ 5 per cent)	metre	31.50	40.63	1279.85	M-043
		Average length of weep hole is taken as one metre for the purpose of estimating.					
		MS clamp	each.	30.00	26.04	781.20	M-061
		collar for AC pipe (average) taking 10% of above pipe rate	each.	10.00	4.06	40.63	M-043/10
		Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.05	3098.00	154.90	Item 12.6 (A)
		b) Labour					
		Mate	day	0.03	314.67	9.44	L-12
		Mason	day	0.50	479.16	239.58	L-11
		Mazdoor	day	0.25	300.36	75.09	L-13
		c) Overhead charges @ 0.055 on (a+b)				141.94	
		d) Contractor's profit @ 0.1 on (a+b+c)				272.26	
		Cost for 30 m = a+b+c+d				2994.89	
		Rate per No. (a+b+c+d)/30				99.83	
					say	<u>100.00</u>	
	Note	1. In case of stone masonry, the size of the weep hole shall be 150 mm x 80 mm or circular with 150 mm diameter.					
		2. For structure in stone masonry, the weep holes shall be deemed to be included in the item of stone masonry work and shall not be paid separately.					
13.9	710.1.4. of IRC:78 & 2200	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification					
		Unit = cum					
		Taking output = 10 cum					
		A Granular material					
		a) Labour					
		Mate	day	0.28	314.67	88.11	L-12
		Mazdoor	day	7.00	300.36	2102.52	L-13
		b) Material					
		Granular material	cum	12.00	190.00	2280.00	M-020
		c) Machinery					
		Plate compactor/power rammer	hour	2.50	142.99	357.48	P&M-019

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Water Tanker	hour	0.05	111.24	5.56	P&M-17

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) Overhead charges @ 0.055 on (a+b+c)				265.85	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				509.95	
		Cost for 10 cum of granular backfill = a+b+c+d+e				5609.47	
		Rate per cum = (a+b+c+d+e)/10				560.95	
					say	561.00	
13.9	B	Sandy material					
		a) Labour					
		Mate	day	0.28	314.67	88.11	L-12
		Mazdoor for filling, watering, ramming etc.	day	7.00	300.36	2102.52	L-13
		b) Material					
		Sand	cum	12.00	252.20	3026.40	M-002
		c) Machinery					
		Plate compactor/power rammer	hour	2.50	142.99	357.48	P&M-019
		Water Tanker	hour	0.06	111.24	6.67	P&M-17
		d) Overhead charges @ 0.055 on (a+b+c)				306.97	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				588.81	
		Cost for 10 cum of sandy backfill = a+b+c+d+e				6476.96	
		Rate per cum = (a+b+c+d+e)/10				647.70	
					say	648.00	
13.10	710.1.4. of IRC:78 and 2200	Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.					
		Unit = cum					
		Taking output = 10 cum.					
		a) Labour					
		Mate	day	0.32	314.67	100.69	L-12
		Mazdoor for filling, watering, ramming etc.	day	7.00	300.36	2102.52	L-13
		Mazdoor (Skilled)	day	1.00	414.80	414.80	L-15
		b) Material					
		Filter media of stone aggregate conforming to clause 2504.2.2. of MoRTH specifications.	cum	12.00	869.86	10438.32	M-021
		c) Machinery					
		Water Tanker of 6 KL capacity	hour	0.06	111.24	6.67	P&M-17
		d) Overhead charges @ 0.055 on (a+b+c)				718.47	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				1378.15	
		cost for 10 cum of Filter Media = a+b+c+d+e				15159.62	
		Rate per cum = (a+b+c+d+e)/10				1515.96	
					say	1516.00	
13.11	2000, 1000 & 2200	Supplying, fitting and fixing in position true to line and level cast steel rocker bearing conforming to IRC: 83(Pt-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.					
		Unit: one tonne capacity					
		Considering a 250 tonne capacity bearing for this analysis					
		a) Labour					
		Mate	day	0.06	314.67	18.88	L-12
		Mazdoor (Skilled)	day	0.50	414.80	207.40	L-15
		Mazdoor	day	1.00	300.36	300.36	L-13
		b) Material					
		Cast steel rocker bearing assembly of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	1.00	70445.00	70445.00	M-098
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				704.45	
		c) Overhead charges @ 0.055 on (a+b)				3942.18	
		d) Contractor's profit @ 0.1 on (a+b+c)				7561.83	
		cost for 250 tonnes capacity bearing = a+b+c+d				83180.10	
		Rate per tonne capacity = (a+b+c+d)/250				332.72	
					say	333.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.12	2000 , 1000 & 2200	Supplying, fitting and fixing in position true to line and level forged steel roller bearing conforming to IRC: 83(Pt. 1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.					
		Unit: one tonne capacity					
		Considering a 250 tonne capacity bearing for this analysis					
		a) Labour					
		Mate	day	0.06	314.67	18.88	L-12
		Mazdoor	day	1.00	300.36	300.36	L-13
		Mazdoor (Skilled)	day	0.50	414.80	207.40	L-15
		b) Material					
		Forged steel roller bearing of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	1.00	44895.62	44895.62	M-099
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				448.96	
		c) Overhead charges @ 0.055 on (a+b)				2522.92	
		d) Contractor's profit @ 0.1 on (a+b+c)				4839.41	
		cost for 250 tonnes capacity bearing = a+b+c+d				53233.55	
		Rate per tonne capacity = (a+b+c+d)/250				212.93	
					say	213.00	
13.13	2000 & 2200	Supplying, fitting and fixing in position true to line and level sliding plate bearing with PTFE surface sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clause 2004 of MoRTH Specifications.					
		Unit: one tonne capacity					
		Considering a 80 tonne capacity bearing for this analysis					
		a) Labour					
		Mate	day	0.06	314.67	18.88	L-12
		Mazdoor	day	1.00	300.36	300.36	L-13
		Mazdoor (Skilled)	day	0.50	414.80	207.40	L-15
		b) Material					
		PTFE sliding plate bearing assembly of 80 tonnes design load capacity duly painted complete with all its components as per drawing and Technical Specifications	each.	1.00	11949.60	11949.60	M-101
		Add 1 per cent for foundation anchorage bolts and consumables.				119.50	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Overhead charges @ 0.055 on (a+b)				692.77	
		d) Contractor's profit @ 0.1 on (a+b+c)				1328.85	
		cost for 80 tonnes capacity bearing = a+b+c+d				14617.35	
		Rate per tonne capacity = (a+b+c+d)/80				182.72	
					say	183.00	
13.14	2000 & 2200	Supplying, fitting and fixing in position true to line and level elastomeric bearing conforming to IRC: 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.					
		Unit: one cubic centimetre					
		Considering an elastomeric bearing of size 500 x 400 x 96 mm for this analysis.					
		Overall volume - 19200 cu.cm					
		Volume of 6 nos. 488 x 388 x 4 mm size reinforcing steel plates = 4545 cu.cm.					
		Hence volume of elastomeric = 14655 cu.cm.					
		a) Labour					
		Mate	day	0.06	314.67	18.88	L-12
		Mazdoor	day	1.00	300.36	300.36	L-13
		Mazdoor (Skilled)	day	0.50	414.80	207.40	L-15
		b) Material					
		Elastomeric bearing assembly consisting of 7 layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation, complete with all components as per drawing and Technical Specifications.	cucm	19200.00	0.58	11136.00	M-047
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				111.36	
		c) Overhead charges @ 0.055 on (a+b)				647.57	
		d) Contractor's profit @ 0.1 on (a+b+c)				1242.16	
		cost for 19200cc of elastomeric bearing = a+b+c+d				13663.73	
		Rate per cc of elastomeric bearing = (a+b+c+d)/19200				0.71	
					say	0.71	
13.15	2000 & 2200	Supplying, fitting and fixing in position true to line and level sliding plate bearing with stainless steel plate sliding on stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specifications.					
		Unit: one tonne capacity					
		Considering the sliding bearing of 80 tonnes design capacity for this analysis.					
		a) Labour					
		Mate	day	0.04	314.67	12.59	L-12
		Mazdoor	day	0.75	300.36	225.27	L-13
		Mazdoor (Skilled)	day	0.35	414.80	145.18	L-15
		b) Material					
		Supply of sliding plate bearing of 80 tonne design capacity complete as per drawings and Technical Specifications.	each.	1.00	10792.80	10792.80	M-102
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				107.93	
		c) Overhead charges @ 0.055 on (a+b)				620.61	
		d) Contractor's profit @ 0.1 on (a+b+c)				1190.44	
		cost for 80 tonnes of capacity bearing = a+b+c+d				13094.81	
		Rate per tonne Capacity =(a+b+c+d) / 80				163.69	
					say	164.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.16	2000 & 2200	Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete as per drawing and approved Technical Specifications.					
		Unit: one tonne capacity			387.20		
		Considering a Pot bearing assembly of 250 tonne capacity for this analysis.					
		a) Labour					
		Mate	day	0.08	314.67	25.17	L-12
		Mazdoor	day	1.50	300.36	450.54	L-13
		Mazdoor (Skilled)	day	0.50	414.80	207.40	L-15
		b) Material					
		Pot type bearing assembly consisting of a metal piston supported by a disc, PTFE pads providing sliding surfaces against stainless steel mating together with cast steel assemblies/fabricated structural steel assemblies duly painted with all components as per clause 2006 and complete as per drawings and Technical Specifications.	each.	1.00	33990.74	33990.74	M-100
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				339.91	
		c) Overhead charges @ 0.055 on (a+b)				1925.76	
		d) Contractor's profit @ 0.1 on (a+b+c)				3693.95	
		cost for 250 tonnes capacity bearing = a+b+c+d				40633.47	
		Rate per tonne capacity = (a+b+c+d)/250				162.53	
					say	<u>163.00</u>	

CHAPTER-14
SUPER-STRUCTURE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1	1500 & 1600 1700		Furnishing and Placing Reinforced/ Prestressed cement concrete in super-structure as per drawing and Technical Specification					
		A	RCC Grade M20					
		Case I	Using Concrete Mixer					
			Unit = 1 cum					
			Taking output = 15 cum					
		a)	Material					
			Cement	tonne	5.12	5000.00	25600.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
		b)	Labour					
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		52677.00			
			For formwork and staging add the following:					
14.1A Case I		(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52677.00	
		d)	Formwork and staging 20 per cent of (a+b+c)				10535.40	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3476.68	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				6668.91	
			Cost for 15 cum = a+b+c+d+e+f				73357.99	
			Rate per cum = (a+b+c+d+e+f)/15				4890.53	
						say	4891.00	
14.1A Case I (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52677.00	
		d)	Formwork and staging 25 per cent of (a+b+c)				13169.25	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3621.54	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				6946.78	
			Cost for 15 cum = a+b+c+d+e+f				76414.57	
			Rate per cum = (a+b+c+d+e+f)/15				5094.30	
						say	5094.00	
14.1A Case I (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52677.00	
		d)	Formwork and staging 30 per cent of (a+b+c)				15803.10	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3766.41	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				7224.65	
			Cost for 15 cum = a+b+c+d+e+f				79471.16	
			Rate per cum = (a+b+c+d+e+f)/15				5298.08	
						say	5298.00	
14.1A Case I		(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52677.00	
		d)	Formwork and staging 25 per cent of (a+b+c)				13169.25	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Overhead charges @ 0.055 on (a+b+c+d)				3621.54	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6946.78	
			Cost for 15 cum = a+b+c+d+e+f				76414.57	
			Rate per cum = (a+b+c+d+e+f)/15				5094.30	
						say	<u>5094.00</u>	
14.1A Case I (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52677.00	
			d) Formwork and staging 30 per cent of (a+b+c)				15803.10	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3766.41	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7224.65	
			Cost for 15 cum = a+b+c+d+e+f				79471.16	
			Rate per cum = (a+b+c+d+e+f)/15				5298.08	
						say	<u>5298.00</u>	
14.1A Case I (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52677.00	
			d) Formwork and staging 35 per cent of (a+b+c)				18436.95	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3911.27	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7502.52	
			Cost for 15 cum = a+b+c+d+e+f				82527.74	
			Rate per cum = (a+b+c+d+e+f)/15				5501.85	
						say	<u>5502.00</u>	
14.1A		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	40.92	5000.00	204600.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	Lead =1 km & P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		382978.00			
			For formwork and staging add the following:					
14.1A Case II		(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				382978.00	
			d) Formwork and staging 20 per cent of (a+b+c)				76595.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				25276.55	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				48485.01	
			Cost for 120 cum = a+b+c+d+e+f				533335.16	
			Rate per cum = (a+b+c+d+e+f)/120				4444.46	
						say	<u>4444.00</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1A Case II (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				382978.00	
		d)	Formwork and staging 25 per cent of (a+b+c)				95744.50	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				26329.74	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				50505.22	
			Cost for 120 cum = a+b+c+d+e+f				555557.46	
			Rate per cum = (a+b+c+d+e+f)/120				4629.65	
						say	<u>4630.00</u>	
14.1A Case II (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				382978.00	
		d)	Formwork and staging 30 per cent of (a+b+c)				114893.40	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				27382.93	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				52525.43	
			Cost for 120 cum = a+b+c+d+e+f				577779.76	
			Rate per cum = (a+b+c+d+e+f)/120				4814.83	
						say	<u>4815.00</u>	
14.1A Case II		(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				382978.00	
		d)	Formwork and staging 25 per cent of (a+b+c)				95744.50	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				26329.74	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				50505.22	
			Cost for 120 cum = a+b+c+d+e+f				555557.46	
			Rate per cum = (a+b+c+d+e+f)/120				4629.65	
						say	<u>4630.00</u>	
14.1A Case II (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				382978.00	
		d)	Formwork and staging 30 per cent of (a+b+c)				114893.40	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				27382.93	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				52525.43	
			Cost for 120 cum = a+b+c+d+e+f				577779.76	
			Rate per cum = (a+b+c+d+e+f)/120				4814.83	
						say	<u>4815.00</u>	
14.1A Case II (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				382978.00	
		d)	Formwork and staging 35 per cent of (a+b+c)				134042.30	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				28436.12	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				54545.64	
			Cost for 120 cum = a+b+c+d+e+f				600002.06	
			Rate per cum = (a+b+c+d+e+f)/120				5000.02	
						say	<u>5000.00</u>	
14.1		B	RCC Grade M25					
		Case I	Using Concrete Mixer					
			Unit = 1 cum					
			Taking output = 15 cum					
		a)	Material					
			Cement	tonne	5.99	5000.00	29950.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
		b)	Labour					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mate	day	0.86	314.67	270.62	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		57027.00			
			For formwork and staging add the following:					
14.1B Case I		(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57027.00	
			d) Formwork and staging 20 per cent of (a+b+c)				11405.40	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3763.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7219.62	
			Cost for 15 cum = a+b+c+d+e+f				79415.80	
			Rate per cum = (a+b+c+d+e+f)/15				5294.39	
						say	<u>5294.00</u>	
14.1B Case I (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57027.00	
			d) Formwork and staging 25 per cent of (a+b+c)				14256.75	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3920.61	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7520.44	
			Cost for 15 cum = a+b+c+d+e+f				82724.79	
			Rate per cum = (a+b+c+d+e+f)/15				5514.99	
						say	<u>5515.00</u>	
14.1B Case I (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57027.00	
			d) Formwork and staging 30 per cent of (a+b+c)				17108.10	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4077.43	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7821.25	
			Cost for 15 cum = a+b+c+d+e+f				86033.78	
			Rate per cum = (a+b+c+d+e+f)/15				5735.59	
						say	<u>5736.00</u>	
14.1B Case I		(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57027.00	
			d) Formwork and staging 25 per cent of (a+b+c)				14256.75	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3920.61	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7520.44	
			Cost for 15 cum = a+b+c+d+e+f				82724.79	
			Rate per cum = (a+b+c+d+e+f)/15				5514.99	
						say	<u>5515.00</u>	
14.1B Case I (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57027.00	
			d) Formwork and staging 30 per cent of (a+b+c)				17108.10	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4077.43	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7821.25	
			Cost for 15 cum = a+b+c+d+e+f				86033.78	
			Rate per cum = (a+b+c+d+e+f)/15				5735.59	
						say	<u>5736.00</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1B Case I (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57027.00	
			d) Formwork and staging 35 per cent of (a+b+c)				19959.45	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4234.25	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8122.07	
			Cost for 15 cum = a+b+c+d+e+f				89342.78	
			Rate per cum = (a+b+c+d+e+f)/15				5956.19	
						say	<u>5956.00</u>	
14.1B		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	47.95	5000.00	239750.00	M-015
			Coarse sand	cum	54.20	252.20	13669.24	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.84	314.67	264.32	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	18.00	300.36	5406.48	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	Lead =1 km & P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		418179.00			
			For formwork and staging add the following:					
14.1B Case II		(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				418179.00	
			d) Formwork and staging 20 per cent of (a+b+c)				83635.80	
			e) Overhead charges @ 0.055 on (a+b+c+d)				27599.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				52941.46	
			Cost for 120 cum = a+b+c+d+e+f				582356.08	
			Rate per cum = (a+b+c+d+e+f)/120				4852.97	
						say	<u>4853.00</u>	
14.1B Case II (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				418179.00	
			d) Formwork and staging 25 per cent of (a+b+c)				104544.75	
			e) Overhead charges @ 0.055 on (a+b+c+d)				28749.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				55147.36	
			Cost for 120 cum = a+b+c+d+e+f				606620.91	
			Rate per cum = (a+b+c+d+e+f)/120				5055.17	
						say	<u>5055.00</u>	
14.1B Case II (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				418179.00	
			d) Formwork and staging 30 per cent of (a+b+c)				125453.70	
			e) Overhead charges @ 0.055 on (a+b+c+d)				29899.80	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57353.25	
			Cost for 120 cum = a+b+c+d+e+f				630885.75	
			Rate per cum = (a+b+c+d+e+f)/120				5257.38	
						say	<u>5257.00</u>	
14.1B Case II		(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				418179.00	
			d) Formwork and staging 25 per cent of (a+b+c)				104544.75	
			e) Overhead charges @ 0.055 on (a+b+c+d)				28749.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				55147.36	
			Cost for 120 cum = a+b+c+d+e+f				606620.91	
			Rate per cum = (a+b+c+d+e+f)/120				5055.17	
						say	<u>5055.00</u>	
14.1B Case II (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				418179.00	
			d) Formwork and staging 30 per cent of (a+b+c)				125453.70	
			e) Overhead charges @ 0.055 on (a+b+c+d)				29899.80	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57353.25	
			Cost for 120 cum = a+b+c+d+e+f				630885.75	
			Rate per cum = (a+b+c+d+e+f)/120				5257.38	
						say	<u>5257.00</u>	
14.1B Case II (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				418179.00	
			d) Formwork and staging 35 per cent of (a+b+c)				146362.65	
			e) Overhead charges @ 0.055 on (a+b+c+d)				31049.79	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				59559.14	
			Cost for 120 cum = a+b+c+d+e+f				655150.58	
			Rate per cum = (a+b+c+d+e+f)/120				5459.59	
						say	<u>5460.00</u>	
14.1		C	RCC Grade M 30					
		Case I	Using Concrete Mixer					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.10	5000.00	30500.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			b) Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	21.00	300.36	6307.56	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		57890.00			
			For formwork and staging add the following:					
14.1C Case I		(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57890.00	
			d) Formwork and staging 20 per cent of (a+b+c)				11578.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3820.74	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7328.87	
			Cost for 15 cum = a+b+c+d+e+f				80617.61	
			Rate per cum = (a+b+c+d+e+f)/15				5374.51	
						say	<u>5375.00</u>	
14.1C Case I (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57890.00	
			d) Formwork and staging 25 per cent of (a+b+c)				14472.50	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3979.94	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7634.24	
			Cost for 15 cum = a+b+c+d+e+f				83976.68	
			Rate per cum = (a+b+c+d+e+f)/15				5598.45	
						say	<u>5598.00</u>	
14.1C Case I (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57890.00	
			d) Formwork and staging 30 per cent of (a+b+c)				17367.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4139.14	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7939.61	
			Cost for 15 cum = a+b+c+d+e+f				87335.75	
			Rate per cum = (a+b+c+d+e+f)/15				5822.38	
						say	<u>5822.00</u>	
14.1C Case I		(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57890.00	
			d) Formwork and staging 25 per cent of (a+b+c)				14472.50	
			e) Overhead charges @ 0.055 on (a+b+c+d)				3979.94	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7634.24	
			Cost for 15 cum = a+b+c+d+e+f				83976.68	
			Rate per cum = (a+b+c+d+e+f)/15				5598.45	
						say	<u>5598.00</u>	
14.1C Case I (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57890.00	
			d) Formwork and staging 30 per cent of (a+b+c)				17367.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4139.14	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7939.61	
			Cost for 15 cum = a+b+c+d+e+f				87335.75	
			Rate per cum = (a+b+c+d+e+f)/15				5822.38	
						say	<u>5822.00</u>	
14.1C Case I (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				57890.00	
			d) Formwork and staging 35 per cent of (a+b+c)				20261.50	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4298.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8244.98	
			Cost for 15 cum = a+b+c+d+e+f				90694.82	
			Rate per cum = (a+b+c+d+e+f)/15				6046.32	
						say	<u>6046.00</u>	
14.1C		Case II	Using Batching Plant, Transit Mixer and Concrete Pump.					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.79	5000.00	243950.00	M-015

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Coarse sand	cum	54.60	252.20	13770.12	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.88	314.67	276.91	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	19.00	300.36	5706.84	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	Lead =1 km & P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		422793.00			
			For formwork and staging add the following:					
14.1C Case II		(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				422793.00	
			d) Formwork and staging 20 per cent of (a+b+c)				84558.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				27904.34	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				53525.59	
			Cost for 120 cum = a+b+c+d+e+f				588781.53	
			Rate per cum = (a+b+c+d+e+f)/120				4906.51	
						say	<u>4907.00</u>	
14.1C Case II (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				422793.00	
			d) Formwork and staging 25 per cent of (a+b+c)				105698.25	
			e) Overhead charges @ 0.055 on (a+b+c+d)				29067.02	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				55755.83	
			Cost for 120 cum = a+b+c+d+e+f				613314.10	
			Rate per cum = (a+b+c+d+e+f)/120				5110.95	
						say	<u>5111.00</u>	
14.1C Case II (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				422793.00	
			d) Formwork and staging 30 per cent of (a+b+c)				126837.90	
			e) Overhead charges @ 0.055 on (a+b+c+d)				30229.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57986.06	
			Cost for 120 cum = a+b+c+d+e+f				637846.66	
			Rate per cum = (a+b+c+d+e+f)/120				5315.39	
						say	<u>5315.00</u>	
14.1C Case II		(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				422793.00	
			d) Formwork and staging 25 per cent of (a+b+c)				105698.25	
			e) Overhead charges @ 0.055 on (a+b+c+d)				29067.02	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				55755.83	
			Cost for 120 cum = a+b+c+d+e+f				613314.10	
			Rate per cum = (a+b+c+d+e+f)/120				5110.95	
						say	<u>5111.00</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1C Case II (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				422793.00	
		d)	Formwork and staging 30 per cent of (a+b+c)				126837.90	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				30229.70	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				57986.06	
			Cost for 120 cum = a+b+c+d+e+f				637846.66	
			Rate per cum = (a+b+c+d+e+f)/120				5315.39	
						say	5315.00	
14.1C Case II (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				422793.00	
		d)	Formwork and staging 35 per cent of (a+b+c)				147977.55	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				31392.38	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				60216.29	
			Cost for 120 cum = a+b+c+d+e+f				662379.22	
			Rate per cum = (a+b+c+d+e+f)/120				5519.83	
						say	5520.00	
14.1		D	RCC/PSC Grade M35					
		Case I	Using Concrete Mixer.					
			Unit = 1 cum					
			Taking output = 15 cum					
		a)	Material					
			Cement	tonne	6.33	5000.00	31650.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
		b)	Labour					
			Mate	day	0.90	314.67	283.20	L-12
			Mason	day	1.50	479.16	718.74	L-11
			Mazdoor	day	21.00	300.36	6307.56	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		59040.00			
			For formwork and staging add the following:					
14.1D Case I		(i)	For solid slab super-structure, 18-28 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
		d)	Formwork and staging 18 per cent of (a+b+c)				10627.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3831.70	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				7349.89	
			Cost for 15 cum = a+b+c+d+e+f				80848.79	
			Rate per cum = (a+b+c+d+e+f)/15				5389.92	
						say	5390.00	
14.1D Case I (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
		d)	Formwork and staging 23 per cent of (a+b+c)				13579.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3994.06	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				7661.33	
			Cost for 15 cum = a+b+c+d+e+f				84274.58	
			Rate per cum = (a+b+c+d+e+f)/15				5618.31	
						say	5618.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1D Case I (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
		d)	Formwork and staging 28 per cent of (a+b+c)				16531.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				4156.42	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				7972.76	
			Cost for 15 cum = a+b+c+d+e+f				87700.38	
			Rate per cum = (a+b+c+d+e+f)/15				5846.69	
						say	<u>5847.00</u>	
14.1D Case I		(ii)	For T-beam & slab, 23-33 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
		d)	Formwork and staging 23 per cent of (a+b+c)				13579.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				3994.06	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				7661.33	
			Cost for 15 cum = a+b+c+d+e+f				84274.58	
			Rate per cum = (a+b+c+d+e+f)/15				5618.31	
						say	<u>5618.00</u>	
14.1D Case I (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
		d)	Formwork and staging 28 per cent of (a+b+c)				16531.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				4156.42	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				7972.76	
			Cost for 15 cum = a+b+c+d+e+f				87700.38	
			Rate per cum = (a+b+c+d+e+f)/15				5846.69	
						say	<u>5847.00</u>	
14.1D Case I (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
		d)	Formwork and staging 33 per cent of (a+b+c)				19483.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				4318.78	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				8284.20	
			Cost for 15 cum = a+b+c+d+e+f				91126.17	
			Rate per cum = (a+b+c+d+e+f)/15				6075.08	
						say	<u>6075.00</u>	
14.1D Case I		(iii)	For box girder and balanced cantilever, 38-58 per cent of cost of concrete.					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
		d)	Formwork and staging 38 per cent of (a+b+c)				22435.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				4481.14	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				8595.63	
			Cost for 15 cum = a+b+c+d+e+f				94551.97	
			Rate per cum = (a+b+c+d+e+f)/15				6303.46	
						say	<u>6303.00</u>	
14.1D Case I (iii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
		d)	Formwork and staging 48 per cent of (a+b+c)				28339.20	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				4805.86	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				9218.51	
			Cost for 15 cum = a+b+c+d+e+f				101403.56	
			Rate per cum = (a+b+c+d+e+f)/15				6760.24	
						say	<u>6760.00</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1D Case I (iii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				59040.00	
			d) Formwork and staging 58 per cent of (a+b+c)				34243.20	
			e) Overhead charges @ 0.055 on (a+b+c+d)				5130.58	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				9841.38	
			Cost for 15 cum = a+b+c+d+e+f				108255.15	
			Rate per cum = (a+b+c+d+e+f)/15				7217.01	
						say	<u>7217.00</u>	
		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.64	5000.00	253200.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			b) Labour					
			Mate	day	0.88	314.67	276.91	L-12
			Mason	day	3.00	479.16	1437.48	L-11
			Mazdoor	day	19.00	300.36	5706.84	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	Lead =1 km & P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		431891.00			
			For formwork and staging add the following:					
14.1D Case II		(i)	For solid slab super-structure, 18-28 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 18 per cent of (a+b+c)				77740.38	
			e) Overhead charges @ 0.055 on (a+b+c+d)				28029.73	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				53766.11	
			Cost for 120 cum = a+b+c+d+e+f				591427.22	
			Rate per cum = (a+b+c+d+e+f)/120				4928.56	
						say	<u>4929.00</u>	
14.1D Case II (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 23 per cent of (a+b+c)				99334.93	
			e) Overhead charges @ 0.055 on (a+b+c+d)				29217.43	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				56044.34	
			Cost for 120 cum = a+b+c+d+e+f				616487.69	
			Rate per cum = (a+b+c+d+e+f)/120				5137.40	
						say	<u>5137.00</u>	
14.1D Case II (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 28 per cent of (a+b+c)				120929.48	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Overhead charges @ 0.055 on (a+b+c+d)				30405.13	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				58322.56	
			Cost for 120 cum = a+b+c+d+e+f				641548.17	
			Rate per cum = (a+b+c+d+e+f)/120				5346.23	
						say	<u>5346.00</u>	
14.1D Case II		(ii)	For T-beam & slab, 23-33 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 23 per cent of (a+b+c)				99334.93	
			e) Overhead charges @ 0.055 on (a+b+c+d)				29217.43	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				56044.34	
			Cost for 120 cum = a+b+c+d+e+f				616487.69	
			Rate per cum = (a+b+c+d+e+f)/120				5137.40	
						say	<u>5137.00</u>	
14.1D Case II (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 28 per cent of (a+b+c)				120929.48	
			e) Overhead charges @ 0.055 on (a+b+c+d)				30405.13	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				58322.56	
			Cost for 120 cum = a+b+c+d+e+f				641548.17	
			Rate per cum = (a+b+c+d+e+f)/120				5346.23	
						say	<u>5346.00</u>	
14.1D Case II (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 33 per cent of (a+b+c)				142524.03	
			e) Overhead charges @ 0.055 on (a+b+c+d)				31592.83	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				60600.79	
			Cost for 120 cum = a+b+c+d+e+f				666608.64	
			Rate per cum = (a+b+c+d+e+f)/120				5555.07	
						say	<u>5555.00</u>	
14.1D Case II		(iii)	For box girder and balanced cantilever, 38-58 per cent of cost of concrete.					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 38 per cent of (a+b+c)				164118.58	
			e) Overhead charges @ 0.055 on (a+b+c+d)				32780.53	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				62879.01	
			Cost for 120 cum = a+b+c+d+e+f				691669.12	
			Rate per cum = (a+b+c+d+e+f)/120				5763.91	
						say	<u>5764.00</u>	
14.1D Case II (iii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 48 per cent of (a+b+c)				207307.68	
			e) Overhead charges @ 0.055 on (a+b+c+d)				35155.93	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				67435.46	
			Cost for 120 cum = a+b+c+d+e+f				741790.07	
			Rate per cum = (a+b+c+d+e+f)/120				6181.58	
						say	<u>6182.00</u>	
14.1D Case II (iii)		(r)	Height above 10m					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				431891.00	
			d) Formwork and staging 58 per cent of (a+b+c)				250496.78	
			e) Overhead charges @ 0.055 on (a+b+c+d)				37531.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				71991.91	
			Cost for 120 cum = a+b+c+d+e+f				791911.02	
			Rate per cum = (a+b+c+d+e+f)/120				6599.26	
						say	<u>6599.00</u>	
14.1		E	PSC Grade M-40					
		Case 1	Using concrete mixer.					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.45	5000.00	32250.00	M-015
			Coarse sand	cum	6.75	252.20	1702.35	M-001
			20 mm Aggregate	cum	8.10	1110.00	8991.00	M-041
			10 mm Aggregate	cum	5.40	899.36	4856.54	M-039
			Admixture @ 0.4 per cent of cement	kg	25.80	36.00	928.80	M-076
			b) Labour					
			Mate	day	0.96	314.67	302.08	L-12
			Mason	day	2.00	479.16	958.32	L-11
			Mazdoor	day	22.00	300.36	6607.92	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	412.64	2475.84	P&M-003
			Generator 33 KVA	hour	6.00	342.36	2054.16	P&M-094(ii)
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		61128.00			
			For formwork and staging add the following:					
14.1E Case I		(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				61128.00	
			d) Formwork and staging 20 per cent of (a+b+c)				12225.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4034.45	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7738.80	
			Cost for 15 cum = a+b+c+d+e+f				85126.85	
			Rate per cum = (a+b+c+d+e+f)/15				5675.12	
						say	<u>5675.00</u>	
14.1E Case I (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				61128.00	
			d) Formwork and staging 25 per cent of (a+b+c)				15282.00	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4202.55	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8061.26	
			Cost for 15 cum = a+b+c+d+e+f				88673.81	
			Rate per cum = (a+b+c+d+e+f)/15				5911.59	
						say	<u>5912.00</u>	
14.1E Case I (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				61128.00	
			d) Formwork and staging 30 per cent of (a+b+c)				18338.40	
			e) Overhead charges @ 0.055 on (a+b+c+d)				4370.65	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8383.71	
			Cost for 15 cum = a+b+c+d+e+f				92220.76	
			Rate per cum = (a+b+c+d+e+f)/15				6148.05	
						say	<u>6148.00</u>	
14.1E Case I		(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				61128.00	
		d)	Formwork and staging 25 per cent of (a+b+c)				15282.00	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				4202.55	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				8061.26	
			Cost for 15 cum = a+b+c+d+e+f				88673.81	
			Rate per cum = (a+b+c+d+e+f)/15				5911.59	
						say	<u>5912.00</u>	
14.1E Case I (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				61128.00	
		d)	Formwork and staging 30 per cent of (a+b+c)				18338.40	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				4370.65	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				8383.71	
			Cost for 15 cum = a+b+c+d+e+f				92220.76	
			Rate per cum = (a+b+c+d+e+f)/15				6148.05	
						say	<u>6148.00</u>	
14.1E Case I (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				61128.00	
		d)	Formwork and staging 35 per cent of (a+b+c)				21394.80	
		e)	Overhead charges @ 0.055 on (a+b+c+d)				4538.75	
		f)	Contractor's profit @ 0.1 on (a+b+c+d+e)				8706.16	
			Cost for 15 cum = a+b+c+d+e+f				95767.71	
			Rate per cum = (a+b+c+d+e+f)/15				6384.51	
						say	<u>6385.00</u>	
14.1E		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
		a)	Material					
			Cement	tonne	51.60	5000.00	258000.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture @ 0.4 per cent of cement	kg	206.40	36.00	7430.40	M-076
		b)	Labour					
			Mate	day	0.94	314.67	295.79	L-12
			Mason	day	3.50	479.16	1677.06	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
		c)	Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	Lead =1 km & P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		444681.00			
			For formwork and staging add the following:					
14.1E Case II		(i)	For solid/voided slab super-structure, 18-28 per cent of (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
		d)	Formwork and staging 18 per cent of (a+b+c)				80042.58	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Overhead charges @ 0.055 on (a+b+c+d)				28859.80	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				55358.34	
			Cost for 15 cum = a+b+c+d+e+f				608941.71	
			Rate per cum = (a+b+c+d+e+f)/120				5074.51	
						say	<u>5075.00</u>	
14.1E Case II (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
			d) Formwork and staging 23 per cent of (a+b+c)				102276.63	
			e) Overhead charges @ 0.055 on (a+b+c+d)				30082.67	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57704.03	
			Cost for 120 cum = a+b+c+d+e+f				634744.33	
			Rate per cum = (a+b+c+d+e+f)/120				5289.54	
						say	<u>5290.00</u>	
14.1E Case II (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
			d) Formwork and staging 28 per cent of (a+b+c)				124510.68	
			e) Overhead charges @ 0.055 on (a+b+c+d)				31305.54	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				60049.72	
			Cost for 120 cum = a+b+c+d+e+f				660546.94	
			Rate per cum = (a+b+c+d+e+f)/120				5504.56	
						say	<u>5505.00</u>	
14.1E Case II		(ii)	For T-beam & slab including launching of precast girders by launching truss upto 40 m, 23-33 per cent of cost of					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
			d) Formwork and staging 23 per cent of (a+b+c)				102276.63	
			e) Overhead charges @ 0.055 on (a+b+c+d)				30082.67	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57704.03	
			Cost for 120 cum = a+b+c+d+e+f				634744.33	
			Rate per cum = (a+b+c+d+e+f)/120				5289.54	
						say	<u>5290.00</u>	
14.1E Case II (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
			d) Formwork and staging 28 per cent of (a+b+c)				124510.68	
			e) Overhead charges @ 0.055 on (a+b+c+d)				31305.54	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				60049.72	
			Cost for 120 cum = a+b+c+d+e+f				660546.94	
			Rate per cum = (a+b+c+d+e+f)/120				5504.56	
						say	<u>5505.00</u>	
14.1E Case II (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
			d) Formwork and staging 33 per cent of (a+b+c)				146744.73	
			e) Overhead charges @ 0.055 on (a+b+c+d)				32528.42	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				62395.41	
			Cost for 120 cum = a+b+c+d+e+f				686349.56	
			Rate per cum = (a+b+c+d+e+f)/120				5719.58	
						say	<u>5720.00</u>	
14.1E Case II		(iii)	For cast-in-situ box girder, segment construction and balanced cantilever, 38-58 per cent of cost of concrete.					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
			d) Formwork and staging 38 per cent of (a+b+c)				168978.78	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Overhead charges @ 0.055 on (a+b+c+d)				33751.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				64741.11	
			Cost for 120 cum = a+b+c+d+e+f				712152.17	
			Rate per cum = (a+b+c+d+e+f)/120				5934.60	
						say	5935.00	
14.1E Case II (iii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
			d) Formwork and staging 48 per cent of (a+b+c)				213446.88	
			e) Overhead charges @ 0.055 on (a+b+c+d)				36197.03	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				69432.49	
			Cost for 120 cum = a+b+c+d+e+f				763757.40	
			Rate per cum = (a+b+c+d+e+f)/120				6364.65	
						say	6365.00	
14.1E Case II (iii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				444681.00	
			d) Formwork and staging 58 per cent of (a+b+c)				257914.98	
			e) Overhead charges @ 0.055 on (a+b+c+d)				38642.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				74123.88	
			Cost for 120 cum = a+b+c+d+e+f				815362.63	
			Rate per cum = (a+b+c+d+e+f)/120				6794.69	
						say	6795.00	
14.1F		F	PSC Grade M-45					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	55.80	5000.00	279000.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture @ 0.4 per cent of cement	kg	223.20	36.00	8035.20	M-076
			b) Labour					
			Mate	day	0.94	314.67	295.79	L-12
			Mason	day	3.50	479.16	1677.06	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	Lead =1 km & P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		466285.00			
			For formwork and staging add the following:					
14.1F		(i)	For solid slab/voided slab super-structure, 16-26 per cent of cost of concrete (a+b+c)					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 16 per cent of (a+b+c)				74605.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				29748.98	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57063.96	
			Cost for 120 cum = a+b+c+d+e+f				627703.54	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e+f)/120				5230.86	
						say	<u>5231.00</u>	
14.1F (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 21 per cent of (a+b+c)				97919.85	
			e) Overhead charges @ 0.055 on (a+b+c+d)				31031.27	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				59523.61	
			Cost for 120 cum = a+b+c+d+e+f				654759.73	
			Rate per cum = (a+b+c+d+e+f)/120				5456.33	
						say	<u>5456.00</u>	
14.1F (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 26 per cent of (a+b+c)				121234.10	
			e) Overhead charges @ 0.055 on (a+b+c+d)				32313.55	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				61983.27	
			Cost for 120 cum = a+b+c+d+e+f				681815.92	
			Rate per cum = (a+b+c+d+e+f)/120				5681.80	
						say	<u>5682.00</u>	
14.1F		(ii)	For T-beam & slab including launching of precast girders by launching truss upto 40 m span, 21-31 per cent of cost of concrete.					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 21 per cent of (a+b+c)				97919.85	
			e) Overhead charges @ 0.055 on (a+b+c+d)				31031.27	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				59523.61	
			Cost for 120 cum = a+b+c+d+e+f				654759.73	
			Rate per cum = (a+b+c+d+e+f)/120				5456.33	
						say	<u>5456.00</u>	
14.1F (ii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 26 per cent of (a+b+c)				121234.10	
			e) Overhead charges @ 0.055 on (a+b+c+d)				32313.55	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				61983.27	
			Cost for 120 cum = a+b+c+d+e+f				681815.92	
			Rate per cum = (a+b+c+d+e+f)/120				5681.80	
						say	<u>5682.00</u>	
14.1F (ii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 31 per cent of (a+b+c)				144548.35	
			e) Overhead charges @ 0.055 on (a+b+c+d)				33595.83	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				64442.92	
			Cost for 120 cum = a+b+c+d+e+f				708872.10	
			Rate per cum = (a+b+c+d+e+f)/120				5907.27	
						say	<u>5907.00</u>	
14.1F		(iii)	For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56 per cent of cost of concrete.					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 36 per cent of (a+b+c)				167862.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				34878.12	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				66902.57	
			Cost for 120 cum = a+b+c+d+e+f				735928.29	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e+f)/120				6132.74	
						say	<u>6133.00</u>	
14.1F (iii)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 46 per cent of (a+b+c)				214491.10	
			e) Overhead charges @ 0.055 on (a+b+c+d)				37442.69	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				71821.88	
			Cost for 120 cum = a+b+c+d+e+f				790040.66	
			Rate per cum = (a+b+c+d+e+f)/120				6583.67	
						say	<u>6584.00</u>	
14.1F (iii)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				466285.00	
			d) Formwork and staging 56 per cent of (a+b+c)				261119.60	
			e) Overhead charges @ 0.055 on (a+b+c+d)				40007.25	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				76741.19	
			Cost for 120 cum = a+b+c+d+e+f				844153.04	
			Rate per cum = (a+b+c+d+e+f)/120				7034.61	
						say	<u>7035.00</u>	
14.1		G	PSC Grade M-50					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	58.80	5000.00	294000.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture @ 0.4 per cent of cement	kg	235.20	36.00	8467.20	M-076
			b) Labour					
			Mate	day	0.94	314.67	295.79	L-12
			Mason	day	3.50	479.16	1677.06	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	Lead =1 km & P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		481717.00			
			For formwork and staging add the following:					
14.1G		(i)	For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55 per cent of cost of concrete					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				481717.00	
			d) Formwork and staging 35 per cent of (a+b+c)				168600.95	
			e) Overhead charges @ 0.055 on (a+b+c+d)				35767.49	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				68608.54	
			Cost for 120 cum = a+b+c+d+e+f				754693.98	
			Rate per cum = (a+b+c+d+e+f)/120				6289.12	
						say	<u>6289.00</u>	
14.1G (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				481717.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Formwork and staging 45 per cent of (a+b+c)				216772.65	
			e) Overhead charges @ 0.055 on (a+b+c+d)				38416.93	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				73690.66	
			Cost for 120 cum = a+b+c+d+e+f				810597.24	
			Rate per cum = (a+b+c+d+e+f)/120				6754.98	
						say	<u>6755.00</u>	
14.1G (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				481717.00	
			d) Formwork and staging 55 per cent of (a+b+c)				264944.35	
			e) Overhead charges @ 0.055 on (a+b+c+d)				41066.37	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				78772.77	
			Cost for 120 cum = a+b+c+d+e+f				866500.50	
			Rate per cum = (a+b+c+d+e+f)/120				7220.84	
						say	<u>7221.00</u>	
14.1		H	PSC Grade M- 55					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	63.50	5000.00	317500.00	M-015
			Coarse sand	cum	54.00	252.20	13618.80	M-001
			20 mm Aggregate	cum	64.80	1110.00	71928.00	M-041
			10 mm Aggregate	cum	43.20	899.36	38852.35	M-039
			Admixture @ 0.4 per cent of cement	kg	254.00	36.00	9144.00	M-076
			b) Labour					
			Mate	day	0.94	314.67	295.79	L-12
			Mason	day	3.50	479.16	1677.06	L-11
			Mazdoor	day	20.00	300.36	6007.20	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2400.00	14400.00	P&M-033
			Generator 100 KVA	hour	6.00	1925.00	11550.00	P&M-095
			Loader	hour	6.00	900.00	5400.00	P&M-06
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	854.55	12818.25	P&M-68
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	4.32	1296.00	Lead =1 km & P&M-69
			Concrete Pump	hour	6.00	234.36	1406.16	P&M-037
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		505894.00			
			For formwork and staging add the following:					
14.1H		(i)	For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55 per cent of cost of concrete					
		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				505894.00	
			d) Formwork and staging 35 per cent of (a+b+c)				177062.90	
			e) Overhead charges @ 0.055 on (a+b+c+d)				37562.63	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				72051.95	
			Cost for 120 cum = a+b+c+d+e+f				792571.48	
			Rate per cum = (a+b+c+d+e+f)/120				6604.76	
						say	<u>6605.00</u>	
14.1H (i)		(q)	Height 5m to 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				505894.00	
			d) Formwork and staging 45 per cent of (a+b+c)				227652.30	
			e) Overhead charges @ 0.055 on (a+b+c+d)				40345.05	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				77389.13	
			Cost for 120 cum = a+b+c+d+e+f				851280.48	
			Rate per cum = (a+b+c+d+e+f)/120				7094.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	<u>7094.00</u>	
14.1H (i)		(r)	Height above 10m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				505894.00	
			d) Formwork and staging 55 per cent of (a+b+c)				278241.70	
			e) Overhead charges @ 0.055 on (a+b+c+d)				43127.46	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				82726.32	
			Cost for 120 cum = a+b+c+d+e+f				909989.48	
			Rate per cum = (a+b+c+d+e+f)/120				7583.25	
						say	<u>7583.00</u>	
		Note	1.Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers conforming IS: 9103 @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
			2. Cement provided for various components of the super structure is for estimating purpose only. Actual quantity of cement will be as per approved mix design. Similarly, the provision for coarse and fine aggregates is for estimating purpose and the exact quantity shall be as per the mix design.					
			3. The items like needle and surface vibrators are part of minor T & P which is already covered under the overhead charges. As such these items have not been added separately in the rate analysis.					
14.2	1600		Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications					
			Unit = 1 MT					
			Taking output = 1 MT					
		a)	Material					
			HYSD bars including 5 per cent for laps and wastage	tonne	1.05	55375.00	58143.75	M-051
			Binding wire	Kg	8.00	62.00	496.00	M-214
		b)	Labour for cutting, bending, tying and placing in position					
			Mate	day	0.44	314.67	138.45	L-12
			Blacksmith	day	3.00	479.16	1437.48	L-02
			Mazdoor	day	8.00	300.36	2402.88	L-13
			Basic Cost of Labour & Material (a+b)		62619.00			
		c)	Overhead charges @ 0.055 on (a+b)				3444.02	
		d)	Contractor's profit @ 0.1 on (a+b+c)				6606.26	
			Rate per MT = a+b+c+d				72668.84	
						say	<u>72669.00</u>	
14.3	1800		High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications					
			Unit = 1 MT					
			Taking output = 0.377 MT					
			Details of cost for 12T13 strand 40 m long cable (weight = 0.377 MT)					
		a)	Material					
			H.T. Strand @ 9.42 kg/m including 2 per cent for wastage and extra length for jacking	tonne	0.385	59593.31	22943.42	M-134
			Sheathing duct ID 66 mm along with 5 per cent extra length 40 x 1.05 = 42 m.	metre	42.00	72.38	3039.96	M-167
			Tube anchorage set complete with bearing plate, permanent wedges etc	each	2.00	36.78	73.56	M-184
			Cement for grouting including 3 per cent wastage @ 3.00 kg/m = 3 x 1.03 x 40 = 123.60 kg (say, = 125 kg)	tonne	0.125	5000.00	625.00	M-015
			Add 0.50 per cent cost of material for Spacers, Insulation tape and miscellaneous items				133.41	
		b)	Labour					
		i)	For making and fixing cables, anchorages					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mate	day	0.16	314.67	50.35	L-12
			Blacksmith	day	1.00	479.16	479.16	L-02
			Mazdoor	day	3.00	300.36	901.08	L-13
			ii) For prestressing					
			Mate/Supervisor	day	0.05	314.67	15.73	L-12
			Prestressing operator / Fitter	day	0.25	414.80	103.70	L-08
			Mazdoor	day	1.00	300.36	300.36	L-13
			iii) For grouting					
			Mate/Supervisor	day	0.05	314.67	15.73	L-12
			Mason	day	0.25	479.16	119.79	L-11
			Mazdoor	day	1.00	300.36	300.36	L-13
			c) Machinery					
			Stressing jack with pump	hour	2.50	116.10	290.25	P&M-62
			Grouting pump with agitator	hour	1.00	120.72	120.72	M-126
			Generator 33 KVA.	hour	3.50	342.36	1198.26	P&M-094(ii)
			d) Overhead charges @ 0.055 on (a+b+c)				1689.10	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3239.99	
			Cost for 0.377 MT (a+b+c+d+e)				35639.94	
			Rate per MT = (a+b+c+d+e)/0.377				94535.65	
						say	94536.00	
		Note	Cost of HT steel has been taken for delivery at site. Hence carriage has not been considered.					
14.4	2702		Providing and laying Cement concrete wearing coat M-30 grade including reinforcement complete as per drawing and Technical Specifications					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Cement concrete M30 Grade Refer relevant item of concrete in Item 14.1 excluding formwork	cum	1.00	3523.00	3523.00	Item 14.1(C)
			HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.075	62619.00	4696.43	Item 14.2 A
			b) Labour					DIR used item
			Mazdoor for cleaning deck slab concrete surface.	day	0.15	300.36	45.05	L-13
			c) Overhead charges @ 0.055 on (a+b)				454.55	
			d) Contractor's profit @ 0.1 on (a+b+c)				871.90	
			Rate per cum (a+b+c+d)				9590.93	
						say	9591.00	
14.5	515 & 2702		Mastic Asphalt					
			Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.					
			Unit = sqm					
			Taking output = 72.46 sqm (2 tonnes)/(0.869 cum) assuming a density of 2.3 tonnes/cum.					
			a) Labour					
			Mate	day	0.49	314.67	154.19	L-12
			Mazdoor	day	11.00	300.36	3303.96	L-13
			Mazdoor (Skilled)	day	1.25	414.80	518.50	L-15
			b) Machinery					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mechanical broom @ 1250 sqm per hour	hour	0.06	360.00	21.60	P&M-53
			Air compressor 250 cfm	hour	0.06	293.76	17.63	P&M-032
			Mastic cooker 1 tonne capacity	hour	6.00	54.81	328.86	P&M-52
			Bitumen boiler 1500 litres capacity	hour	6.00	182.52	1095.12	P&M-035
			Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.00	168.75	168.75	P&M-72
			c) Material					
			Base mastic (without coarse aggregates) = 60 per cent					
			Coarse aggregate(3.35mm to 9.5 mm size) = 40 per cent .					
			Proportion of material required for mastic asphalt with coarse aggregates (based on mix design done by CRRRI for a specific case)					
			i) Bitumen 80/100 or 60/70 @ 10.2 per cent by weight of mix. $2 \times 10.2/100 = 0.204$	tonne	0.204	42271.00	8623.28	M-013
			ii) Crusher stone dust @ 31.9 per cent by weight of mix = $2 \times 31.9/100 = 0.638$ tonnes = $0.638/1.625 = 0.39$	cum	0.39	271.35	105.83	M-004
			iii) Lime stone dust filler with calcium carbonate content not less than 80 per cent by weight @ 17.92 per cent by weight of mix = $2 \times 17.92/100 = 0.36$	tonne	0.36	4703.60	1693.30	M-293
			iv) Coarse aggregates 9.5 mm to 3.35 mm size @ 40 per cent by weight of mix = $2 \times 40/100 = 0.8$ MT = $0.8/1.456 = 0.55$	cum	0.55	899.36	494.65	M-039
			v) Pre-coated stone chips of 9.5 mm nominal size for skid resistance = $72.46 \times 0.005/10 = 0.036$	cum	0.036	795.00	28.62	M-151
			vi) Bitumen for coating of chips @ 2 per cent by weight = $0.036 \times 1.456 \times 2/100 = 0.001048$ MT = 1.05kg	kg	1.05	42.27	44.38	M-013/1000
			d) Overhead charges @ 0.055 on (a+b+c)				912.93	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1751.16	
			Cost for 72.46 sqm = a+b+c+d+e				19262.75	
			Rate per sqm = (a+b+c+d+e)/72.46				265.84	
						say	266.00	
		Note	1.The rates for 6 mm or any other thickness may be worked out on pro-rata basis.					
			2. Where tack coat is required to be provided before laying mastic asphalt, the same is required to be measured and paid separately.					
			3.The quantities of binder, filler and aggregates are for estimating purpose. Exact quantities shall be as per mix design.					
			4.This rate analysis is based on design made by CRRRI for a specific case and is meant for estimating purposes only. Actual design is required to be done for each case.					
			5.The quantity of bitumen works out 17 per cent of the mastic asphalt blocks without aggregates and falls within the standards laid down by MoRTH Specifications.					
14.6	2703, 1500, 1600 & 1700		Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.					
			Unit = 1 RM					
			Taking output = 2 x 24 m span = 48 m					
			a) Material					
			i) M30 Grade Reinforced Cement Concrete	cum	4.092	3523.00	14416.12	Item 14.1(C)
			No. of vertical posts = $(12 + 2)/2 = 28$ Nos., External area of vertical post $0.25 \times 0.275 = 0.069$ sqm, Concrete in Vertical posts = $0.069 \times 28 = 1.932$ cum, Hand rail in 3 tiers = $3 \times 24 = 72$ m, External area = $0.170 \times 0.175 = 0.03$ sqm, Concrete in hand rails = $0.03 \times 72 = 2.16$ cum, Total Concrete = $1.932 + 2.16 = 4.092$ cum. (Refer MoRTH SD / 202).					DIR used item

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 5 per cent of above cost for form work for casting in casting yard.				720.81	
			ii) HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.865	62619.00	54165.44	Item 14.2 A
			Refer MoRTH SD / 202.					DIR used item
			Add 5 per cent of (a) for handling and fixing of precast panels in position				3465.12	
			b) Overhead charges @ 0.055 on (a)				4002.21	
			c) Contractor's profit @ 0.1 on (a+b)				7676.97	
			Rate for 48 m (a+b+c)				84446.65	
			Rate per metre (a+b+c)/48				1759.31	
						say	1759.00	
		Note	1.Quantities of material have been adopted from standard plans of MoRTH vide drawing no. SD/202.					
			2.48 m length is the total linear length adding both sides of 24 m span.					
14.7	2703, 1500, 1600 & 1700		Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.					
			Unit = 1 RM					
			Taking output = 2 x 24 m span = 48 m.					
			a) Material					
			i) M30 Grade Reinforced Cement Concrete	cum	4.092	3523.00	14416.12	Item 14.1(C)
			No. of vertical posts = (12 + 2)/2 = 28 Nos., External area of vertical post 0.25x0.275 = 0.069sqm, Concrete in vehicle posts = 0.069 x 28 = 1.932 cum, Hand rail in 3 tiers = 3 x 24 = 72 m, External area = 0.170 x 0.175 = 0.03 sqm, Concrete in hand rails = 0.03 x 72 = 2.16 cum, Total Concrete = 1.932 + 2.16 = 4.092 cum. (Refer MoRTH SD / 202).					
			Add 12 per cent of above cost for form work.				1729.93	
			ii) HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.865	62619.00	54165.44	Item 14.2 A
			refer MoRTH SD / 202.					
			b) Overhead charges @ 0.055 on (a)				3867.13	
			c) Contractor's profit @ 0.1 on (a+b)				7417.86	
			Rate for 48 m (a+b+c)				81596.48	
			Rate per metre (a+b+c)/48				1699.93	
						say	1700.00	
		Note	1. Quantities of material have been adopted from standard plans of MoRTH vide drawing no. SD/202.					
			2. 48 m length is the total linear length adding both sides of 24 m span.					
14.8	2703.2 & 1900		Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specification					
			Unit = 1 RM					
			Taking output = 2 x 50 m span = 100 m					
			a) Material:					
			1) ISMC 100 = 2.806 x 1.05 = 2.946 MT	tonne	2.946	55000.00	162030.00	M-178
			2) MS Flat = 0.964 x 1.05 = 1.012 MT	tonne	1.012	55000.00	55660.00	M-178
			3) MS bars = 0.17 x 1.05 = 0.180 MT	tonne	0.18	55000.00	9900.00	M-178
			4) MS bolts, nuts and washers	tonne	0.15	48000.00	7200.00	M-063*1000
			Add @ 5 per cent of cost of material for painting one shop coat with red oxide primer and three coats of synthetic enamel paint and consumables to safeguard against weathering and corrosion.				11739.50	
			Add for cost of concrete for fixing vertical posts in the performed recess @ 1 per cent of cost of material.				2347.90	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Add for electricity charges, welding and drilling equipment, electrodes and other consumables @ 1 per cent of cost of material.				2347.90	
		b) Labour					
		Mate	day	2.80	314.67	881.08	L-12
		Mazdoor (Skilled)	day	30.00	414.80	12444.00	L-15
		Mazdoor	day	40.00	300.36	12014.40	L-13
		c) Overhead charges @ 0.055 on (a+b)				15211.06	
		d) Contractor's profit @ 0.1 on (a+b+c)				29177.58	
		Cost for 100 m steel railing = a+b+c+d				320953.42	
		Rate per metre (a+b+c+d)/100				3209.53	
					say	3210.00	
14.9	2705	Drainage Spouts complete as per drawing and Technical specification					
		Unit = 1 No.					
		Taking output = 1 No.					
		a) Material					
		Corrosion resistant Structural steel including 5 per cent wastage	Kg	4.00	55.00	220.00	M-054/1000
		GI pipe 100mm dia	metre	6.00	40.63	243.78	M-043
		GI bolt 10 mm Dia	each	6.00	11.85	71.10	M-125
		Galvanised MS flat clamp	each	2.00	14.80	29.60	M-117
		b) Labour					
		For fabrication					
		Mate	day	0.02	314.67	6.29	L-12
		Skilled (Blacksmith, welder etc.)	day	0.02	479.16	9.58	L-02
		Mazdoor	day	0.02	300.36	6.01	L-13
		For fixing in position					
		Mate	day	0.01	314.67	3.15	L-12
		Mason	day	0.01	479.16	4.79	L-11
		Mazdoor	day	0.20	300.36	60.07	L-13
		Add @ 5 per cent of cost of material and labour for electrodes, cutting gas, sealant, anti-corrosive bituminous paint, mild steel grating etc.				32.72	
		c) Overhead charges @ 0.055 on (a+b)				37.79	
		d) Contractor's profit @ 0.1 on (a+b+c)				72.49	
		Rate per metre (a+b+c+d)				797.37	
					say	797.00	
		Note 1. In case of viaducts in urban areas, the drainage spouts should be connected with suitably located pipelines to discharge the surface run-off to drains provided at ground level.					
		2. In case of bridges, sufficient length of G.I Pipe shall be provided to ensure that there is no splashing of water from the drainage spout on the structure.					
14.10	2700	PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification					
		Unit = 1 cum					
		Taking output = 1 cum					
		Material					
		Concrete, Rate as per item No. 12.8 (A) excluding formworks	cum	1.00	3699.00	3699.00	Item 12.8 (A)
		Rate per cum			say	3699.00	
14.11	1500,1600,1700 & 2704	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification					
		Unit = 1 cum					
		Taking output = 1 cum					
		a) Material					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cement concrete M30 Grade Refer relevant item of concrete in item 12.8(G) by using batching plant, excluding formwork i.e. per cum basic cost (a+b+c) (Excluding OH & CP)	cum	1.00	3520.00	3520.00	Item 12.8 (G)
			(Refer relevant item of concrete in item No. 13.8 (G) except that form work may be added at the rate of 2 per cent of cost against 3.5 per cent provided in the foundation concrete.				70.40	
			HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.05	62619.00	3130.95	Item 14.2 A
			b) Overhead charges @ 0.055 on (a)				369.67	
			c) Contractor's profit @ 0.1 on(a+b)				709.10	
			Rate per cum (a+b+c)				7800.13	
						say	7800.00	
		Note	The grade of reinforced cement concrete may be adopted as M30 for severe conditions and M25 for moderate conditions.					
14.12	1600		Providing anti-corrosive treatment to HYSD reinforcement with Fusion Bonded Epoxy Coating (FBEC)					
			Unit = 1 MT					
			Taking output = 1 MT					
			To be taken as per the prevailing market rates.				VALUE	
		Note	Contractors generally do not have expertise for this item . The job is therefore, got done from specialised firms who have the expertise in the field of construction chemicals. The prevailing rate in the market is required to be ascertained from the market and added in the cost estimate. Detailed guidelines in this regard have been issued by MoRTH vide their circular no. RW/NH-34041/44/91-S&R dated 21.3.2000.					
14.13	1800 & 2300		Precast - pretensioned Girders					
			Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawing and technical specifications					
			Unit = 1 cum					
			Taking output = 1 cum					
			Grade of concrete - M40					
			a) Material					
			Cement	tonne	0.47	5000.00	2350.00	M-015
			Coarse sand	cum	0.45	252.20	113.49	M-001
			20 mm Aggregate	cum	0.54	1110.00	599.40	M-041
			10 mm Aggregate	cum	0.36	899.36	323.77	M-039
			Admixture @ 0.4 per cent of cement	Kg	1.88	36.00	67.68	M-076
			HYSD steel .	tonne	0.10	55375.00	5537.50	M-051
			HT strand with 5 per cent as wastage and extra length for anchoring	tonne	0.06	59593.31	3575.60	M-134
			LDO for steam curing	Litre	37.00	39.82	1473.34	M-136
			Add consumables such as binding wire, foam, packing tape, shuttering oil, HDPE pipe for unbonding of strand, bolt & nuts etc @ 1 per cent of material cost				140.41	
			b) Labour					
			(i) Cutting, bending, making reinforcement cage, placing in position, binding etc. complete					
			Taking quantity of steel 100 Kg/cum of concrete including laps and wastage					
			Mate	day	0.06	314.67	18.88	L-12
			Mazdoor (Skilled)	day	0.35	414.80	145.18	L-15
			Mazdoor	day	1.40	300.36	420.50	L-13
			(ii) Cable cutting and threading in position including binding by insulation tape with HDPE pipes etc., prestressing and cutting of extra length of HT strand after de-stressing.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Taking quantity of HT strand 60 Kg/cum</i>					
		Mate	day	0.02	314.67	6.29	L-12
		Mazdoor (Skilled)	day	0.14	414.80	58.07	L-15
		Mazdoor	day	0.50	300.36	150.18	L-13
		(iii) Erection and dismantling of shuttering					
		<i>Taking shuttering area 10 sqm/cum of concrete</i>					
		Mate	day	0.12	314.67	37.76	L-12
		Mazdoor (Skilled)	day	1.00	414.80	414.80	L-15
		Mazdoor	day	2.00	300.36	600.72	L-13
		(iv) Concreting by Batching plant and stationary concrete pump					
		Mate	day	0.03	314.67	9.44	L-12
		Mazdoor (Skilled)	day	0.05	414.80	20.74	L-15
		Mazdoor	day	0.60	300.36	180.22	L-13
		(v) Steam curing and manual curing					
		Mate	day	0.01	314.67	3.15	L-12
		Mazdoor	day	0.35	300.36	105.13	L-13
		(vi) Handling of precast girder, stacking in stockyard and again loading in trailer					
		Mate	day	0.01	314.67	3.15	L-12
		Mazdoor	day	0.25	300.36	75.09	L-13
		(vii) Placement of girders in position over pier caps including placement of sand jacks, channel, levelling etc.					
		Mate	day	0.01	314.67	3.15	L-12
		Mazdoor (Skilled)	day	0.06	414.80	24.89	L-15
		Mazdoor	day	0.24	300.36	72.09	L-13
		c) Machinery					
		i) At casting yard					
		Generator 100 KVA	hour	0.05	1925.00	96.25	P&M-095
		Batching Plant @ 20 cum/hour	hour	0.05	2400.00	120.00	P&M-033
		Transit Mixer 4 cum capacity	hour	0.10	854.55	85.46	P&M-68
		Concrete Pump stationary	hour	0.05	234.36	11.72	P&M-037
		Crane 35 tonne capacity	hour	0.10	784.62	78.46	P&M-40
		Trailer 30 tonne capacity	hour	0.10	1864.08	186.41	P&M-102
		Loader	hour	0.05	900.00	45.00	P&M-06
		ii) For transportation and placement at site					
		Crane 35 tonne capacity	hour	0.15	784.62	117.69	P&M-40
		Trailer 30 tonne capacity for transporting to site.	tonne.km	2.5xL	2.27	5.68	Lead =1 km & P&M-103
		(L - Lead in Kilometer)					
		Trailer 30 tonne capacity during placement.	hour	0.15	1864.08	279.61	P&M-102
		Cost of formwork, steam curing arrangement, pretensioning arrangement etc @ 5 per cent of cost material, labour and machinery				857.69	
		d) Overhead charges @ 0.055 on (a+b+c)				1012.80	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				1942.74	
		Rate per cum = (a+b+c+d+e)				21370.11	
					say	21370.00	
14.14	1700 & 1800	Providing and fixing Helical pipes in voided concrete slabs					
		<i>Unit = 1 RM</i>					
		<i>Taking output = 1 RM</i>					
		a) Material					
		Helical pipes 600mm diameter	metre	1.00	#VALUE!	#VALUE!	M-132
		Tie rods 20mm diameter	each	1.00	47.55	47.55	M-181
		Consumables for sealing joints etc.@ 5 per cent of cost of material				#VALUE!	
		b) Labour					
		Mate	day	0.01	314.67	3.15	L-12
		Fitter	day	0.05	414.80	20.74	L-08

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	day	0.20	300.36	60.07	L-13
		c) Overhead charges @ 0.055 on (a+b)				#VALUE!	
		d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
		Rate per cum (a+b+c+d)				#VALUE!	
					say	#VALUE!	
14.15	800	Crash Barriers					
		The rate analysis for rigid crash barrier in reinforced cement concrete, semi-rigid crash barrier with metal beam and flexible crash barrier with wire ropes have been made and included in chapter-8 on Traffic and Transportation.	Per m			VALUE	
14.16	800	Painting on concrete surface					
		Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 sqm.					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.01	314.67	3.15	L-12
		Painter	day	0.25	479.16	119.79	L-18
		Mazdoor (Skilled)	day	0.25	414.80	103.70	L-15
		b) Material					
		Water based paint of approved quality for cement concrete surface	Litres	5.00	80.48	402.40	M-185
		c) Overhead charges @ 0.055 on (a+b)				34.60	
		d) Contractor's profit @ 0.1 on (a+b+c)				66.36	
		Cost for 10 sqm (a+b+c+d)				730.00	
		Rate per sqm (a+b+c+d)/10				73.00	
					say	73.00	
14.17	2604	Burried Joint					
		Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised weldable structural steel plate as per IS: 2062, placed symmetrical to centre line of the joint, resting freely over the top surface of the deck concrete, welding of 8 mm dia. 100 mm long galvanised nails spaced 300 mm c/c along the centre line of the plate, all as specified in clause 2604.					
		Unit = Running meter					
		Taking output = 12 m					
		a) Labour					
		Mate	day	0.02	314.67	6.29	L-12
		Mazdoor	day	0.40	300.36	120.14	L-13
		Mazdoor (Skilled)	day	0.20	414.80	82.96	L-15
		b) Material					
		Galvanised M.S plate 200 mm wide, 12 mm thick @ 94.20 kg/sqm including 5 per cent wastage	kg	237.50	49.50	11755.99	M-044/1000
		Add 1 per cent of cost of steel plate cutting, welding consumables and galvanised nails.				117.56	
		c) Overhead charges @ 0.055 on (a+b)				664.56	
		d) Contractor's profit @ 0.1 on (a+b+c)				1274.75	
		Cost for 12 m = (a+b+c+d)				14022.26	
		Rate per m = (a+b+c+d)/12				1168.52	
					say	1169.00	
		Note					Guidelines laid down vide the MoRTH circular No. RW/NH-34059/1/96-S&R dated 30.11.2000 and subsequent corrigendum dated 25.01.2001 may be referred for expansion joints.
14.18	2605	Filler joint					
		(i) Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Unit = Running meter					
		Taking output = 12 m					
		a) Labour					
		Cutting, bending, carrying & fixing etc.					
		Mate	day	0.04	314.67	12.59	L-12
		Mazdoor	day	0.50	300.36	150.18	L-13
		Mazdoor (Skilled)	day	0.50	414.80	207.40	L-15
		b) Material					
		Copper plate - 12m long x 250 mm wide	kg	55.00	527.00	28985.00	M-053
		Area = 12 x 0.25 = 3 sqm					
		Weight = 3 x 0.002 x 8900 = 53.4 kg					
		Wastage @ 2.5 per cent = 1.33 kg/54.73 kg say = 55 kg.					
		c) Overhead charges @ 0.055 on (a+b)				1614.53	
		d) Contractor's profit @ 0.1 on (a+b+c)				3096.97	
		Cost for 12 m = (a+b+c+d)				34066.67	
		Rate per m = (a+b+c+d)/12				2838.89	
					say	<u>2839.00</u>	
14.18	(ii)	Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.					
		Unit = Running meter					
		Taking output = 12 m					
		a) Labour					
		For carrying, placing & fixing.					
		Mate	day	0.01	314.67	2.52	L-12
		Mazdoor	day	0.10	300.36	30.04	L-13
		Mazdoor (Skilled)	day	0.10	414.80	41.48	L-15
		b) Material					
		20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	3.00	700.00	2100.00	M-052
		Area = 12 x 0.25 = 3 sqm					
		c) Overhead charges @ 0.055 on (a+b)				119.57	
		d) Contractor's profit @ 0.1 on (a+b+c)				229.36	
		Cost for 12 m = (a+b+c+d)				2522.97	
		Rate per m = (a+b+c+d)/12				210.25	
					say	<u>210.00</u>	
14.18	(iii)	Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.					
		Unit = Running meter					
		Taking output = 12 m					
		a) Labour					
		Mate	day	0.01	314.67	3.15	L-12
		Mazdoor	day	0.20	300.36	60.07	L-13
		Mazdoor (Skilled)	day	0.10	414.80	41.48	L-15
		b) Material					
		Premoulded joint filler 12 m long, 20 mm thick and 300 mm deep.	sqm	3.60	400.00	1440.00	M-150
		c) Overhead charges @ 0.055 on (a+b)				84.96	
		d) Contractor's profit @ 0.1 on (a+b+c)				162.97	
		Cost for 12 m = (a+b+c+d)				1792.62	
		Rate per m = (a+b+c+d)/12				149.39	
					say	<u>149.00</u>	
14.18	(iv)	Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6 per cent bitumen by weight					
		Unit = Running meter					
		Taking output = 12 m					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			12m long x 100 mm wide x 10mm deep recess					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.02	314.67	6.29	L-12
		Mazdoor	day	0.50	300.36	150.18	L-13
		Mazdoor (Skilled)	day	0.10	414.80	41.48	L-15
		b) Material					
		Sand	cum	0.012	252.20	3.03	M-001
		Volume $12 \times 0.1 \times 0.01 = 0.012$ cum					
		Weight $0.012 \times 1400 = 16.8$ kg					
		Bitumen	cum	0.001	42271.00	42.27	M-013
		$16.8 \times 0.06 = 1$ kg					
		c) Overhead charges @ 0.055 on (a+b)				13.38	
		d) Contractor's profit @ 0.1 on (a+b+c)				25.66	
		Cost for 12 m = (a+b+c+d)				282.29	
		Rate per m = (a+b+c+d)/12				23.52	
					say	23.50	
		Note					
		For arriving at the final rate of filler joints per m length and per cm depth of joint filling compound, the rates at Sl. No. i), ii), iii) & iv) shall be added					
14.19	2600	Asphaltic Plug joint					
		Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of weldable structural steel conforming to IS: 2062, asphaltic plug to consist of polymer modified bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking/backer rod, all as per approved drawings and specifications.					
		Unit = Running meter					
		Taking output = 12 m					
		a) Labour					
		Mate	day	0.052	314.67	16.36	L-12
		Mazdoor	day	1.00	300.36	300.36	L-13
		Mazdoor (Skilled)	day	0.30	414.80	124.44	L-15
		b) Material					
		Crushed stone aggregate 12.5 mm nominal size	cum	0.75	999.25	749.44	M-040
		Polymer modified bitumen	kg	77.50	43.17	3345.75	M-050/ 1000
		Galvanised structural steel plate 200 mm wide, 6 mm thick, 12 m long (2.4 sqm) @ 47.10 kg/sqm including 5 per cent wastage	kg	113.00	43.62	4929.06	M-119
		Add 1 per cent for welding and foam caulking/backer rod and other incidentals.				94.65	
		c) Machinery					
		Mastic cooker 1 tonne capacity	hour	1.00	54.81	54.81	P&M-52
		Smooth 3-wheeled steel roller 8-10 capacity	hour	0.50	803.00	401.50	P&M-011
		d) Overhead charges @ 0.055 on (a+b+c)				550.90	
		e) Contractor's profit @ 0.1 on (a+b+c+d)				1056.73	
		Cost for 12 m asphalt plug joint = (a+b+c+d+e)				11624.01	
		Rate per m = (a+b+c+d+e)/12				968.67	
					say	969.00	
		Note					
		The nominal size of aggregates shall be 12.5 mm for depth of joint upto 75 mm and 20 mm for joints of depth more than 75 mm.					
14.20	2606	Elastomeric Slab Steel Expansion Joint					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Providing and laying of an elastomeric slab steel expansion joint, catering to right or skew (less than 20 deg., moderately curved with maximum horizontal movement upto 50 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation and clause 2606 of MoRTH specifications for road & bridge works.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.06	314.67	18.88	L-12
			Mazdoor	day	1.00	300.36	300.36	L-13
			Mazdoor (Skilled)	day	0.50	414.80	207.40	L-15
			b) Material					
			Supply of elastomeric slab seal expansion joint assembly manufactured by using chloroprene, elastomer for elastomeric slab unit conforming to clause 915.1 of IRC: 83 (part II), complete as per approved drawings and standard specification conforming to clause 2606 of MoRTH Specification	metre	12.00	19090.75	229089.00	M-057
			Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				11454.45	
			c) Overhead charges @ 0.055 on (a+b)				13258.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				25432.89	
			Cost for 12 m = (a+b+c+d)				279761.84	
			Rate per m = (a+b+c+d)/12				23313.49	
						say	<u>23313.00</u>	
14.21	2600		Compression Seal Joint					
			Providing and laying of compression seal joint consisting of steel armoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and fixed into the joint gap with special adhesive binder to cater for a horizontal movement upto 40 mm and vertical movement of 3 mm.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.036	314.67	11.33	L-12
			Mazdoor	day	0.60	300.36	180.22	L-13
			Mazdoor (Skilled)	day	0.30	414.80	124.44	L-15
			b) Material					
			1. Galvanised angle sections 100mm x 100mm of 12mm thickness weldable structural steel as per IS: 2062, 2 nos. of 12 m length each @ 17.7 kg/m and 5 per cent wastage.	kg	446.00	43.62	19454.52	M-119
			Add 5 per cent of cost of above for structural steel for anchorage, welding and other incidentals.				988.53	
			Preformed continuous chloroprene elastomer or closed cell foam sealing element with high tear strength, vulcanised in a single operation for the full length of a joint to ensure water tightness.	metre	12.00	1505.40	18064.80	M-152
			Add 1 per cent of cost of sealing element for lubricant-cum-adhesive and other consumables.				180.65	
			c) Overhead charges @ 0.055 on (a+b)				2145.25	
			d) Contractor's profit @ 0.1 on (a+b+c)				4114.97	
			Cost for 12 m = (a+b+c+d)				45264.70	
			Rate per m = (a+b+c+d)/12				3772.06	
						say	<u>3772.00</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	1. The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					
			3. The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					
14.22	2607		Strip Seal Expansion Joint					
			Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.					
			<i>Unit = Running meter</i>					
			<i>Taking output = 12 m</i>					
		a)	Labour					
			Mate	day	0.05	314.67	15.73	L-12
			Mazdoor	day	1.00	300.36	300.36	L-13
			Mazdoor (Skilled)	day	0.25	414.80	103.70	L-15
		b)	Material					
			Supply of complete assembly of strip seal expansion joint comprising of edge beams, anchorage, strip seal element and complete accessories as per approved specifications and drawings.	metre	12.00	7430.50	89166.00	M-177
			Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				4479.29	
		c)	Overhead charges @ 0.055 on (a+b)				5173.58	
		d)	Contractor's profit @ 0.1 on (a+b+c)				9923.87	
			Cost for 12 m = (a+b+c+d)				109162.53	
			Rate per m = (a+b+c+d)/12				9096.88	
						say	9097.00	
		Note	1. The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					
14.23	2600		Modular Strip / Box Seal Joint					
			Providing and laying of a modular strip Box seal expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.					
			<i>Unit = Running meter</i>					
			<i>Taking output = 12 m</i>					
		a)	Labour					
			Mate	day	0.056	314.67	17.62	L-12
			Mazdoor	day	1.00	300.36	300.36	L-13
			Mazdoor (Skilled)	day	0.40	414.80	165.92	L-15
		b)	Material					
			Supply of a modular strip/box seal joint assembly comprising of edge beams, central beam, 2 modules chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative.	metre	12.00	25090.00	301080.00	M-139
		c)	Overhead charges @ 0.055 on (a+b)				16586.01	
		d)	Contractor's profit @ 0.1 on (a+b+c)				31814.99	
			Cost for 12 m Modular strip/box seal joint = (a+b+c+d)				349964.91	
			Rate per m = (a+b+c+d)/12				29163.74	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	<u>29164.00</u>	
		Note	1. The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					
			3. The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					
14.24	2600		Modular Strip / Box Seal Joint					
			Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.					
			Unit = Running meter					
			Taking output = 12 m					
		a)	Labour					
			Mate	day	0.07	314.67	22.03	L-12
			Mazdoor	day	1.25	300.36	375.45	L-13
			Mazdoor (Skilled)	day	0.50	414.80	207.40	L-15
		b)	Material					
			Supply of a modular box/box seal joint assembly containing 3 modules/cells and comprising of edge beams, two central beams, chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative	metre	12.00	27000.00	324000.00	M-140
		c)	Overhead charges @ 0.055 on (a+b)				17853.27	
		d)	Contractor's profit @ 0.1 on (a+b+c)				34245.81	
			Cost for 12 m Modular strip/box seal joint = (a+b+c+d)				376703.96	
			Rate per m = (a+b+c+d)/12				31392.00	
						say	<u>31392.00</u>	
		Note	1. The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					
			3. The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					

CHAPTER - 15
RIVER TRAINING AND PROTECTION WORKS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
15.1	2503		Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.					
		A	Boulder Laid Dry Without Wire Crates.					
			<i>Unit = cum</i>					
			<i>Taking output = 1 cum</i>					
			a) Material					
			Stone	cum	1.00	445.00	445.00	M-018
			Stone Spalls	cum	0.20	574.90	114.98	M-019
			b) Labour					
			Mate	day	0.04	314.67	12.59	L-12
			Mason	day	0.35	479.16	167.71	L-11
			Mazdoor *	day	0.75	300.36	225.27	L-13
			c) Overhead charges @ 0.055 on (a+b)				53.10	
			d) Contractor's profit @ 0.1 on (a+b+c)				101.86	
			Rate per cum = (a+b+c+d)				1120.51	
						<i>say</i>	<i>1121.00</i>	
		*	Including excavation for trimming for preparation of bed.					
		Note	Nominal excavation required for preparation of bed has been taken into account while making provision for labour.					
15.2	2503		Boulder Apron Laid in Wire Crates					
			Providing and laying of boulder apron laid in wire crates made with 4mm dia GI wire conforming to IS: 280 & IS:4826 in 100mm x 100mm mesh (weaved diagonally) including 10 per cent extra for laps and joints laid with stone boulders weighing not less than 40 kg each.					
			<i>Unit = cum</i>					
			<i>Taking output = 3 mx1.5mx1.25m = 5.63 cum</i>					
			a) Material					
			4mm GI wire crates woven in mesh size of 100 mm x 100 mm.	sqm	22.00	96.39	2120.58	M-118
			Stone	cum	5.63	445.00	2505.35	M-018
			Stone Spalls	cum	1.13	574.90	649.64	M-019
			b) Labour					
			Mate	day	0.18	314.67	56.64	L-12
			Mazdoor (Skilled)	day	1.50	414.80	622.20	L-15
			Mazdoor	day	*3.00	300.36	901.1	L-13
			c) Overhead charges @ 0.055 on (a+b)				377.1	
			d) Contractor's profit @ 0.1 on (a+b+c)				723.25	
			Cost for 5.63 cum = a+b+c+d				7955.79	
			Rate per cum = (a+b+c+d)/5.63				1413.11	
						<i>say</i>	<i>1413.00</i>	
		*	Including excavation for trimming for preparation of bed.					
		Note	Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.					
15.3	2503		Cement Concrete Blocks (size 0.5 x 0.5 x 0.5 m)					
			Providing and laying of apron with cement concrete blocks of size 0.5x0.5x0.5 m cast in-situ and made with nominal mix of M-15 grade cement concrete with a minimum cement content of 250 kg/cum as per IRC: 21-2000.					
			<i>Unit = cum</i>					
			<i>Taking out put = 1 cum</i>					
			Concrete Grade M15 Rate as per item No. 12.8 (A) including OH & CP	cum	1.00	3846.00	3846.00	Item 12.8 (A)
			Add 2 per cent of cost to account for excavation for preparation of bed, nominal surface reinforcement and filling of granular material in recesses between blocks.				76.92	
			Rate per cum				3922.92	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	3923.00	
15.4	2504		Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications					
		A	Stone/Boulder					
			Unit = cum					
			Taking output = 1 cum					
		a)	Material					
			Stone weighing not less than 40kg	cum	1.00	445.00	445.00	M-018
			Stone spalls of minimum 25 mm size	cum	0.20	574.90	114.98	M-019
		b)	Labour					
			Mate	day	0.04	314.67	12.59	L-12
			Mason	day	0.35	479.16	167.71	L-11
			Mazdoor	day	0.75	300.36	225.27	L-13
		c)	Overhead charges @ 0.055 on (a+b)				53.10	
		d)	Contractor's profit @ 0.1 on (a+b+c)				101.86	
			Rate per cum = (a+b+c+d)				1120.51	
						say	1121.00	
15.4		B	Cement Concrete Blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15					
			Unit = cum					
			Taking output = 1 cum					
			Concrete Grade M15 Rate as per item No. 12.8 (A)	cum	1.00	3846.00	3846.00	Item 12.8 (A)
			Add 2 per cent of cost to account for nominal surface reinforcement and filling of granular material in recesses between blocks.				76.92	
			Rate per cum				3922.92	
						say	3923.00	
15.5	2504		Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification					
			Unit = cum					
			Taking output = 1 cum					
		a)	Material					
			Graded stone aggregate of required size	cum	1.20	869.86	1043.83	M-021
		b)	Labour					
			Mate	day	0.05	314.67	15.73	L-12
			Mazdoor (Skilled)	day	0.25	414.80	103.70	L-15
			Mazdoor *	day	1.00	300.36	300.36	L-13
		c)	Overhead charges @ 0.055 on (a+b)				80.50	
		d)	Contractor's profit @ 0.1 on (a+b+c)				154.41	
			Rate per cum = (a+b+c+d)				1698.54	
						say	1699.00	
			Includes Mazdoor required for trimming of slope to proper profile and preparation of bed.					
15.6	700 & 2504		Geotextile Filter					
			Laying of a geotextile filter between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching.					
			Unit = sqm					
			Taking output = 10 sqm.					
		a)	Labour					
			Mate	day	0.02	314.67	6.29	L-12
			Mazdoor	day	0.30	300.36	90.11	L-13
			Mazdoor (Skilled)	day	0.10	414.80	41.48	L-15
		b)	Material					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Permeable synthetic geotextile including 5 per cent for overlap and wastage	sqm	11.00	100.00	1100.00	M-179
		c) Overhead charges @ 0.055 on (a+b)				68.08	
		d) Contractor's profit @ 0.1 on (a+b+c)				130.60	
		Cost for 10 sqm = a+b+c+d				1436.56	
		Rate per sqm = (a+b+c+d)/10				143.66	
					say	144.00	
15.7	2504.4	Toe protection					
		A toe wall for toe protection can either be in dry rubble masonry in case of dry rubble pitching or pitching with stones in wire crates or it can be in PCC M15 nominal mix if cement concert block have been used for pitching . Rates for toe wall can be adopted from respective clauses depending upon approved design. The rate for excavation for foundation, dry rubble masonry and PCC M15 have been analysed and given in respective chapters.					
15.8	2505	Providing and laying Flooring complete as per drawing and Technical specifications laid over cement concert bedding.					
	A	Rubble stone laid in cement mortar 1:3					
		Unit = cum					
		Taking output = 1 cum					
		a) Cement mortar 1:3 (Rate as in Item 12.6 sub-analysis) excluding OH & CP	cum	0.33	3098.00	1022.34	Item 12.6 (A)
		b) Add for cement concrete bedding (M15 Nominal mix) vide Item 12.8 (A) excluding OH & CP . Quantity shall be adopted as per design (Assume Rubble stone Flooring thickness 300mm and cement concrete bedding thickness 100mm)	cum	0.33	3187.00	1051.71	Item 12.8 (A)
		Add 1 per cent of cost to account for excavation for preparation of bed.				20.74	
		c) Material					
		Stone	cum	1.00	445.00	445.00	M-018
		Stone Spalls	cum	0.20	574.90	114.98	M-019
		d) Labour					
		Mate	day	0.08	314.67	25.17	L-12
		Mason	day	0.50	479.16	239.58	L-11
		Mazdoor (for laying stones, filling of quarry spalls)	day	1.50	300.36	450.54	L-13
		e) Overhead charges @ 0.055 on (a+c+d)				126.37	
		f) Contractor's profit @ 0.1 on (a+c+d+e)				242.40	
		Rate per cum = (a+b+c+d+e+f)				3738.83	
					say	3739.00	
	*	Includes cement mortar for laying and filling of joints.					
15.8	B	Cement Concrete blocks Grade M15					
		Concrete Grade M15 block. (Rate as per item No. 12.8 (A) including OH & CP.	cum	1.00	3846.00	3846.00	Item 12.8 (A)
		Add for cement concrete bedding (M15 Nominal mix) vide Item 12.8 (A) including OH & CP. Quantity shall be adopted as per design (Assume Cement Concrete blocks thickness 300mm and cement concrete bedding thickness 100mm)	cum	0.33	3846.00	1269.18	Item 12.8 (A)
		Add 1 per cent of cost to account for excavation for preparation of bed.				51.15	
		Rate per cum				5166.33	
					say	5166.00	
15.9	2506	Dry Rubble Flooring					
		Construction of dry rubble flooring at cross drainage works for relatively less important works.					
		Unit = cum					
		Taking output = 1 cum					
		a) Material					
		Stone	cum	1.00	445.00	445.00	M-018

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Stone Spalls	cum	0.20	574.90	114.98	M-019
		b) Labour					
		Mate	day	0.10	314.67	31.47	L-12
		Mason	day	0.50	479.16	239.58	L-11
		mazdoor	day	1.50	300.36	450.54	L-13
		Add 1 per cent of (b) for trimming and preparation of base.				7.22	
		c) Overhead charges @ 0.055 on (a+b)				70.88	
		d) Contractor's profit @ 0.1 on (a+b+c)				135.97	
		Rate per cum = (a+b+c+d)				1495.63	
					say	1496.00	
15.10	2507.2	Curtain wall complete as per drawing and Technical specification					
	A	Stone masonry in cement mortar (1:3)					
		Coursed rubble masonry (1st sort)	cum	1.00	3080.00	3080.00	Item 12.7 (A)
		Rate same as per item No. 12.7 (A) including OH & CP					
		Rate per cum			say	3080.00	
15.10		B Cement concrete Grade M15					
		Concrete Grade M15 Rate as per item No. 12.8 (A) including OH & CP	cum	1.00	3846.00	3846.00	Item 12.8 (A)
		Rate per cum			say	3846.00	
	Note	Other items like excavation for foundation, filling behind wall, filter media, weep holes etc. shall be added separately as per approved design.					
15.11	2507.2	Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.					
		Unit = cum					
		Taking Output = 1 cum					
		a) Material					
		Stone	cum	1.00	445.00	445.00	M-018
		Stone Spalls	cum	0.20	574.90	114.98	M-019
		b) Labour					
		Mate	day	0.05	314.67	15.73	L-12
		Mason	day	0.25	479.16	119.79	L-11
		Mazdoor	day	1.00	300.36	300.36	L-13
		Add 1 per cent of cost of (a+b) for trimming and preparation of bed.				9.96	
		c) Overhead charges @ 0.055 on (a+b)				55.32	
		d) Contractor's profit @ 0.1 on (a+b+c)				106.11	
		Rate per cum = (a+b+c+d)				1167.26	
					say	1167.00	
15.12	2503.3	Gabian Structure for Retaining Earth					
		Providing and construction of a gabian structure for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5 m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire					
		Unit = cum					
		Taking output = 7 x 3 x 0.6 = 12.60 cum					
		a) Labour					
		Mate	day	0.28	314.67	88.11	L-12
		Mazdoor	day	5.00	300.36	1501.80	L-13
		Mazdoor (Skilled)	day	2.00	414.80	829.60	L-15
		b) Material					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	sqm	61.00	96.39	5879.79	M-118
		Stone boulders with least dimension of 200 mm	cum	12.60	445.00	5607.00	M-018
		Stone spalls of minimum size 25 mm	cum	2.52	574.90	1448.75	M-019
		c) Overhead charges @ 0.055 on (a+b)				844.53	
		d) Contractor's profit @ 0.1 on (a+b+c)				1619.96	
		Cost for 12.60 cum (a+b+c+d)				17819.53	
		Rate per cum (a+b+c+d)/12.60				1414.25	
					say	1414.00	
		Note Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.					
15.13	2503.3	Gabian Structure for Erosion Control, River Training Works and Protection works					
		Providing and constructing gabian structures for erosion control, river training works and protection works with wire crates of size 2 m x 1 m x 0.3 m each divided into 1m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be securely tied with 4 mm galvanised steel wire.					
		Unit = cum					
		Taking output = 2 x 1 x 0.3 x 10 Nos. = 6.00 cum					
		a) Labour					
		Mate	day	0.14	314.67	44.05	L-12
		Mazdoor	day	2.50	300.36	750.90	L-13
		Mazdoor (Skilled)	day	1.00	414.80	414.80	L-15
		b) Material					
		Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size to cover 6.00 cum.	sqm	65.00	96.39	6265.35	M-118
		Stone boulders with least dimension of 200 mm	cum	6.00	445.00	2670.00	M-018
		Stone spalls of minimum size 25 mm	cum	1.20	574.90	689.88	M-019
		c) Overhead charges @ 0.055 on (a+b)				595.92	
		d) Contractor's profit @ 0.1 on (a+b+c)				1143.09	
		Cost for 6.00 cum (a+b+c+d)				12574.00	
		Rate per cum (a+b+c+d)/6.00				2095.67	
					say	2096.00	
		Note Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.					