

**PUBLIC WORKS DEPARTMENT
ARUNACHAL PRADESH**



**ANALYSIS OF RATES
FOR
ROAD AND BRIDGE WORKS 2010**

**ZERO LEAD BASED:
(EXCLUDING CARTAGE COST)**

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DIRECT USED ITEMS

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.					
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip					
		<i>Unit : cum</i>					
		<i>Taking output = 5.5 cum</i>					
		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	554.00	182.82	P&M-048
		Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.330	1139.00	375.87	P&M-017
		b) Overheads @ 10 % on (a)				55.87	
		c) Contractors profit @ 10 % on (a+b)				61.46	
		Cost for 5.5 cum = a+b+c				676.01	
		Rate per cum = (a+b+c)/ 5.5				122.91	
	Note	Unloading will be by tipping.			<i>say</i>	<i>122.90</i>	
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>					
1.4(I)	Case I	Surfaced Road					
		Speed with load : 25 km / hour.					
		Speed while Returning empty : 35 km / hour.					
		a) Machinery.					
		i) Tipper 10 tonne capacity					
		Time taken for onward haulage with load	hour	0.400	554.00	221.60	P&M-048
		Time taken for empty return trip.	hour	0.290	554.00	160.66	P&M-048
		b) Overheads @ 10 % on (a)				38.23	
		c) Contractors profit @ 10 % on (a+b)				42.05	
		cost for 100 t.km = a+b+c				462.53	
		Rate per t.km = (a+b+c)/100				4.63	
					<i>say</i>	<i>4.65</i>	
1.4(II)	Case II	Unsurfaced Gravelled 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 hanlage with load	hour	0.500	554.00	277.00	P&M-048
		Time taken for empty return trip	hour	0.330	554.00	182.82	P&M-048
		b) Overheads @ 10 % on (a)				45.98	
		c) Contractors profit @ 10 % on (a+b)				50.58	
		Cost for 100 t.km = a+b+c				556.38	
		Rate per t.Km = (a+b+c)/100				5.56	
					<i>say</i>	<i>5.55</i>	
1.4(III)	Case III	Katcha Track and Track in river bed / nallah bed and choe bed.					
		Speed with load : 10 km / hour					
		Speed while returning empty : 15 km / hour					
		a) Machinery					
		i) Tipper 10 tonnes capacity					
		Time taken for onward haulage	hour	1.000	554.00	554.00	P&M-048
		Time taken for empty return trip	hour	0.670	554.00	371.18	P&M-048
		b) Overheads @ 10 % on (a)				92.52	
		c) Contractors profit @ 10 % on (a+b)				101.77	
		Cost for 100 t.km = a+b+c				1119.47	
		Rate per t.Km = (a+b+c)/100				11.19	
					<i>say</i>	<i>11.20</i>	

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	250.00	15.00	L-12
		Mazdoor	day	1.500	200.00	300.00	L-13
		b) Material					
		Supply of quarried stone 150 - 200 mm size	cum	1.100	440.00	484.00	M-002
		c) Overheads @ 10 % on (a+b)				79.90	
		d) Contractors profit @ 10 % on (a+b+c)				87.89	
		Rate per cum = a+b+c+d				966.79	
						<i>say</i>	<i>966.80</i>
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 mm nominal size.					
		<i>Unit : cum</i>					
		<i>Taking Output = 600 cum at crusher location.</i>					
		a) Labour					
		Mate	day	0.760	250.00	190.00	L-12
		Mazdoor Skilled	day	2.000	250.00	500.00	L-14
		Mazdoor including breaking of any oversize boulder.	day	17.000	200.00	3400.00	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	468.00	374400.00	M-001
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	18110.00	108660.00	P&M-028
		Front end loader 1 cum bucket capacity	Hour	20.000	1139.00	22780.00	P&M-017
		Tipper 5.5 cum capacity	Hour	20.000	554.00	11080.00	P&M-048
		d) Overheads @ 10 % on (a+b+c)				52101.00	
		e) Contractors profit @ 10 % on (a+b+c+d)				57311.10	
		Cost for 600 cum = a+b+c+d+e				630422.10	
		Rate per cum = (a+b+c+d+e)*0.95/600				998.17	
						<i>say</i>	<i>998.15</i>
	Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.					
		2. 95% of above cost will be attributed to the production of 600 cum of stone chips of 13.2 mm size and balance 5% 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>					
		a) Labour					
		Mate	day	0.760	250.00	190.00	L-12
		Mazdoor Skilled	day	2.000	250.00	500.00	L-14
		Mazdoor including breaking of any size boulder.	day	17.000	200.00	3400.00	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	468.00	374400.00	M-001
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	18110.00	108660.00	P&M-028
		Front end loader 1 cum bucket capacity	Hour	20.000	1139.00	22780.00	P&M-017
		Tipper 5.5 cum capacity	Hour	20.000	554.00	11080.00	P&M-048

		d) Overheads @ 10 % on (a+b+c)				52101.00	
		e) Contractors profit @ 10 % on (a+b+c+d)				57311.10	
		Cost for 670 cum = a+b+c+d+e				630422.10	
		Rate per cum = (a+b+c+d+e)*0.90/670				846.84	
					say	846.85	
	Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 20 and 40 mm.					
		2. 90% of above cost will be attributed to the production of 670 cum of stone aggregates of 20mm size and balance 10% 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.					
		<i>Unit : cum</i>					
		<i>Taking Output = 750 cum at crusher location.</i>					
		a) Labour					
		Mate	day	0.760	250.00	190.00	L-12
		Mazdoor Skilled	day	2.000	250.00	500.00	L-14
		Mazdoor	day	17.000	200.00	3400.00	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	468.00	374400.00	M-001
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	18110.00	108660.00	P&M-028
		Front end loader 1 cum bucket capacity	Hour	20.000	1139.00	22780.00	P&M-017
		Tipper 5.5 cum capacity	Hour	20.000	554.00	11080.00	P&M-048
		d) Overheads @ 10 % on (a+b+c)				52101.00	
		e) Contractors profit @ 10 % on (a+b+c+d)				57311.10	
		Cost for 750 cum = (a+b+c+d+e)x0.85				535858.79	
		Rate per cum = (a+b+c+d+e)x0.85/750				714.48	
					say	714.50	
	Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.					
		2. 85% of above cost will be attributed to the production of 750 cum of stone aggregates of 40mm size and balance 15% 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.					
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 9000 sqm</i>					
		Case -1:-19 mm nominal chipping size					
		a) Labour					
		Mate	day	0.440	250.00	110.00	L-12
		Mazdoor	day	9.000	200.00	1800.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	7.200	354.00	2548.80	P&M-031
		Air compressor 250 cfm	hour	7.200	469.00	3376.80	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	2618.00	15708.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	554.00	3324.00	P&M-048

		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Bitumen pressure distributor	hour	6.000	1067.00	6402.00	P&M-004
		Smooth wheeled roller 8-10 tonne weight	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Bitumen@ 1.20 kg per sqm	tonne	10.800	37830.00	408564.00	M-074
		Crushed stone chipping,19 mm nominal size @ 0.015 cum per sqm	cum	135.000	726.00	98010.00	M-053
		d) Overheads @ 10 % on (a+b+c)				55002.56	
		e) Contractors profit @ 10 % on (a+b+c+d)				60502.82	
		Cost for 9000 sqm= a+b+c+d+e				665530.98	
		Rate per sqm = (a+b+c+d+e)/9000				73.95	
					<i>say</i>	<i>73.95</i>	
		Case - II13 mm nominal size chipping					
		a) Labour					
		Male	day	0.440	250.00	110.00	L-12
		Mazdoor	day	9.000	200.00	1800.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	7.200	354.00	2548.80	P&M-031
		Air compressor 250 cfm	hour	7.200	469.00	3376.80	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	2618.00	15708.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	554.00	3324.00	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Vibratory roller 8-10 tonne weight	hour	6.000	598.00	3588.00	P&M-059
		c) Material					
		Bitumen@ 1.00 kg per sqm	tonne	9.000	37830.00	340470.00	M-074
		Crushed stone chipping,13 mm nominal size @ 0.01 cum per sqm	cum	90.000	1067.00	96030.00	M-052
		d) Overheads @ 10 % on (a+b+c)				48079.16	
		e) Contractors profit @ 10 % on (a+b+c+d)				52887.08	
		Cost for 9000 sqm= a+b+c+d+e				581757.84	
		Rate per sqm = (a+b+c+d+e)/9000				64.64	
					<i>say</i>	<i>64.65</i>	
	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					
5.15	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					
	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, weight of mix = 264 tonnes</i>					
		weight of mix = 176 tonnes					
		a) Labour					
		Male	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1001.00	6006.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017

		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	554.00	3324.00	P&M-048
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1235.00	7410.00	P&M-037
		Water tanker 6 KL capacity	hour	2.000	444.00	888.00	P&M-060
	c)	Material					
		Residual Binder @ 11 % of mix 80 x 2.2 x 0.11	tonne	19.360	35417.00	685673.12	M-077
		Fine aggregate 4.75 mm and below 87 % 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	1640.00	167411.20	M-005
		Filler @ 2 % of total mix = 80 x 2.2 x 0.02	tonne	3.520	10500.00	36960.00	M-188
		Cost of water	KL	12.000	55.00	660.00	M-189
	d)	Overheads @ 10 % on (a+b+c)				92136.43	
	e)	Contractors profit @ 10 % on (a+b+c+d)				101350.08	
		Cost for 16000 sqm = a+b+c+d+e				1114850.83	
		Rate per sqm = (a+b+c+d+e)/16000				69.68	
					<i>say</i>	<u>69.70</u>	
	Case II	3 mm thickness					
		<i>Unit = sqm</i>					
		<i>Taking output = 20000 sqm (60 cum)</i>					
	a)	Labour					
		Male	day	0.200	250.00	50.00	L-12
		Mazdoor	day	5.000	200.00	1000.00	L-13
	b)	Machinery					
		Mechanical broom	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1001.00	6006.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	554.00	3324.00	P&M-048
		Water tanker 6 KL capacity	hour	2.000	444.00	888.00	P&M-060
	c)	Material					
		Residual Binder @ 13 % of mix = 60 x 2.2 x 0.13	tonne	17.160	35417.00	607755.72	M-077
		Fine aggregate 3 mm and below 85 % of total mix, 60x 2.2 x 0.85 = 112.2 tonnes. Taking density 1.5,	cum	74.800	490.00	36652.00	M-005
		Filler @ 2 % of total mix = 60x 2.2 x 0.02	tonne	2.640	10500.00	27720.00	M-188
		Cost of water	KL	12.000	55.00	660.00	M-189
	d)	Overheads @ 10 % on (a+b+c)				69582.77	
	e)	Contractors profit @ 10 % on (a+b+c+d)				76541.05	
		Cost for 30000 sqm = a+b+c+d+e				841951.54	
		Rate per sqm = (a+b+c+d+e)/20000				42.10	
					<i>say</i>	<u>42.10</u>	
	Case III	1.5 mm thickness					
		<i>Unit = sqm</i>					
		<i>Taking output = 24000 sqm (36 cum)</i>					
	a)	Labour					
		Male	day	0.200	250.00	50.00	L-12
		Mazdoor	day	5.000	200.00	1000.00	L-13
	b)	Machinery					
		Mechanical broom	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1001.00	6006.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	554.00	3324.00	P&M-048
		Water tanker 6 KL capacity	hour	2.000	444.00	888.00	P&M-060
	c)	Material					
		Residual Binder @ 16 % of mix, 36 x 2.2 x 0.16	tonne	12.670	35417.00	448733.39	M-077

		Fine aggregate 2.36 mm and below, 82 % of total mix, 36x 2.2 x 0.82 = 64.94 tonnes. Taking density 1.5	cum	43.300	460.00	19918.00	M-022
		Filler @ 2 % of total mix = 36x 2.2 x 0.02	tonne	1.580	10500.00	16590.00	M-188
		Cost of water	KL	12.000	55.00	660.00	M-189
		d) Overheads @ 10 % on (a+b+c)				50894.14	
		e) Contractors profit @ 10 % on (a+b+c+d)				55983.55	
		Cost for 24000 sqm= a+b+c+d+e				615819.08	
		Rate per sqm = (a+b+c+d+e)/24000				25.66	
					say	25.65	
	Note	1. Tack coat, if required to be provided, before laying slurry seal may be measured and paid separately					
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	250.00	30.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Bitumen emulsion pressure distributor @ 1750 sqm per hour	tonne	6.000	1067.00	6402.00	P&M-004
		c) Material					
		Bitumen emulsion @ 0.75 kg per sqm	tonne	7.880	35417.00	279085.96	M-077
		d) Overheads @ 10 % on (a+b+c)				29105.60	
		e) Contractors profit @ 10 % on (a+b+c+d)				32016.16	
		Cost for 10500 sqm= a+b+c+d+e				352177.71	
		Rate per sqm = (a+b+c+d+e)/10500				33.54	
					say	33.55	
		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	250.00	40.00	L-12
		Mazdoor for pre-coating of grit	day	4.000	200.00	800.00	L-13
		c) Material					
		Crushed stone grit 3 mm size @ 3.75 kg per sqm	cum	26.250	500.00	13125.00	M-024
		Bitumen emulsion for pre-coating grit @ 2 % of grit, 39.38 x 0.02	tonne	0.790	35417.00	27979.43	M-077
						41944.43	
						3.99	
					say	4.00	
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					
		Unit = sqm					
		Taking output = 10500 sqm					
		a) Labour					
		Mate	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13

		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Hydraulic Chip spreader	hour	6.000	2618.00	15708.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Modified binder	tonne	9.450	40210.00	379984.50	M-078
		Crushed stone aggregates 5.6 mm size	cum	105.000	1640.00	172200.00	M-050
		d) Overheads @ 10 % on (a+b+c)				58324.05	
		e) Contractors profit @ 10 % on (a+b+c+d)				64156.46	
		Cost for 10500 sqm= a+b+c+d+e				705721.01	
		Rate per sqm = (a+b+c+d+e)/10500				67.21	
					<i>say</i>	<u>67.20</u>	
	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 1					
		<i>Unit = sqm</i>					
		<i>Taking output = 10500 sqm</i>					
		a) Labour					
		Male	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm capacity	hour	6.000	469.00	2814.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Hydraulic Chip spreader	hour	6.000	2618.00	15708.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Modified binder	tonne	11.550	40210.00	464425.50	M-078
		Crushed stone chipping 11.2 mm size	cum	105.000	1650.00	173250.00	M-051
		d) Overheads @ 10 % on (a+b+c)				66873.15	
		e) Contractors profit @ 10 % on (a+b+c+d)				73560.47	
		Cost for 10500 sqm= a+b+c+d+e				809165.12	
		Rate per sqm = (a+b+c+d+e)/10500				77.06	
					<i>say</i>	<u>77.05</u>	
	Case III	Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %					
		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 % after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at					
		<i>Unit = sqm</i>					
		<i>Taking output = 10500 sqm</i>					
		a) Labour					
		Male	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	L-15

		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfem capacity	hour	6.000	469.00	2814.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Hydraulic Chip spreader	hour	6.000	2618.00	15708.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Modified binder	tonne	15.750	40210.00	633307.50	M-078
		Crushed stone aggregates 11.2 mm size	cum	126.000	1650.00	207900.00	M-051
		d) Overheads @ 10 % on (a+b+c)				87286.35	
		e) Contractors profit @ 10 % on (a+b+c+d)				96014.99	
		Cost for 10500 sqm= a+b+c+d+e				1056164.84	
		Rate per sqm = (a+b+c+d+e)/10500				100.59	
					<i>say</i>	<u>100.60</u>	
	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 704.3, laid over a tack coat with 1.05 kg per sqm of paving grade bitumen 80 - 100 penetration and constructed t					
		<i>Unit = sqm</i>					
		<i>Taking output = 3500 sqm</i>					
		a) Labour					
		Mate	day	0.560	250.00	140.00	L-12
		Mazdoor	day	12.000	200.00	2400.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	2.800	354.00	991.20	P&M-031
		Air compressor 250 cfem capacity	hour	2.800	469.00	1313.20	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	tonne	2.000	1067.00	2134.00	P&M-004
		Pneumatic roller	hour	2.000	1235.00	2470.00	P&M-037
		c) Material					
		Paving grade bitumen of 80 - 100 penetration @ 1.05 kg per sqm	tonne	3.680	36878.00	135711.04	M-075
		Geotextile including 10 % for overlaps	sqm	3850.000	25.00	96250.00	M-108
		d) Overheads @ 10 % on (a+b+c)				24200.94	
		e) Contractors profit @ 10 % on (a+b+c+d)				26621.04	
		Cost for 10500 sqm= a+b+c+d+e				292831.42	
		Rate per sqm = (a+b+c+d+e)/3500				83.67	
					<i>say</i>	<u>83.65</u>	
	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 bi					
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					
		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	0.07	250	17.50	
		Painter 1st class	day	1.25	300	375.00	
		Mazdoor	day	0.50	200	100.00	
		b) Material					
		Paint	Litre	0.50	180	90.00	

		c) Overheads @ 10 % on (a+b)				58.25	
		d) Contractors profit @ 10 % on (a+b+c)				64.08	
		Cost for 1600 cm = a+b+c+d				704.83	
		Rate per cm height per letter = (a+b+c +d)/1600				0.44	
					<i>say</i>	<u>0.45</u>	
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 40 sqm</i>					
		a) Labour					
		Mate	day	0.12	250	30.00	
		Painter	day	2.00	300	600.00	
		Mazdoor	day	1.00	200	200.00	
		b) Material					
		Paint conforming to requirement of clause 803.3.	Litre	6.00	160	960.00	
		Add for scaffolding @ 1% of labour cost where required				9.60	
		Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				89.50	
		c) Overheads @ 10 % on (a+b)				179.96	
		d) Contractors profit @ 10 % on (a+b+c)				206.91	
		Cost for 40 sqm = a+b+c+d				2275.97	
		Rate per sqm = (a+b+c+d)/40				56.90	
					<i>say</i>	<u>56.90</u>	
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.03	250	7.50	
		Painter	day	0.45	300	135.00	
		Mazdoor	day	0.25	200	50.00	
		b) Material					
		Paint ready mixed approved brand.	Litre	1.25	180	225.00	
		Add @ 1% on cost of material for scaffolding				2.25	
		Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				20.88	
		c) Overheads @ 10 % on (a+b)				44.06	
		d) Contractors profit @ 10 % on (a+b+c)				48.47	
		Cost for 10 sqm = a+b+c+d				533.16	
		Rate per sqm = (a+b+c+d)/10				53.32	
					<i>say</i>	<u>53.30</u>	
12.6	Sub-analysis (A)	Cement mortar 1:3 (1cement :3 sand)					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Materials					
		Cement	MT	0.51	7989.00	4074.39	
		Sand	cum	1.05	490.00	514.50	
		b) Labour					
		Mate	day	0.04	250.00	10.00	
		Mazdoor	day	0.90	200.00	180.00	
		Total Material and Labour = (a+b)				4779.00	

	Sub-analysis (B)	Cement mortar 1:2 (1cement :2 sand)					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Materials					
		Cement	MT	0.67	7989.00	5368.61	
		Sand	cum	0.93	490.00	455.70	
		b) Labour					
		Mate	day	0.04	250.00	10.00	
		Mazdoor	day	0.90	200.00	180.00	
		Total Material and Labour = (a+b)				6014.00	
	Sub-analysis (D)	Cement mortar 1:6 (1cement :6 sand)					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Materials					
		Cement	MT	0.29	7989.00	2300.83	
		Sand	cum	1.34	490.00	655.20	
		b) Labour					
		Mate	day	0.04	250.00	10.00	
		Mazdoor	day	0.90	200.00	180.00	
		Total Material and Labour = (a+b)				3146.00	
12.7	1400	Stone masonry work in cement mortar 1:3 in foundation complete as drawing and Technical Specification					
		<i>Unit = cum</i>					
		<i>Taking output = 5 cum</i>					
	(A)	Square Rubble Coursed Rubble Masonry (first sort)					
		a) Material					
		Stone	cum	5.50	470.00	2585.00	M-169
		Through and bond stone	each	35.00	12.00	420.00	M-182
		(35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)					
		Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.50	4779.00	7168.50	Item 12.6 (A)
		b) Labour					
		Mate	day	0.66	250.00	165.00	L-12
		Mason	day	7.50	300.00	2250.00	L-11
		Mazdoor	day	9.00	200.00	1800.00	L-13
		c) Overhead charges @ 20 % on (a+b)				2877.70	
		d) Contractor's profit @ 10 % on (a+b+c)				1726.62	
		Cost for 5 cum = a+b+c+d				18992.82	
		Rate per cum (a+b+c+d)/5				3798.56	
						<i>say</i>	3798.55
	1405.3	B) Random Rubble Masonry (coursed/uncoursed)					
		<i>Unit = cum</i>					
		<i>Taking output = 5 cum</i>					
		a) Material					
		Stone	cum	5.50	470.00	2585.00	
		Through and bond stone	Nos	35.00	12.00	420.00	
		(35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)					
		Cement mortar 1:3 (Rate as in item 12.6 A)	cum	1.55	4779.00	7407.45	
		b) Labour					
		Mate	day	0.62	250.00	155.00	
		Mason	day	6.00	300.00	1800.00	
		Mazdoor	day	9.00	200.00	1800.00	
		c) Overheads @ 20 % on (a+b)				2833.49	
		d) Contractors profit @ 10 % on (a+b+c)				1700.09	
		Cost for 5 cum = a+b+c+d				18701.03	
		Rate per cum (a+b+c+d)/5				3740.21	
						<i>say</i>	3740.20
	@	The labour already considered in cement mortar has been taken into account while proposing labour for masonry works.					

12.7 (Add)	1400	Stone masonry work in cement mortar 1:6 in foundation complete as drawing and Technical Specification					
		<i>Unit = cum</i>					
		<i>Taking output = 5 cum</i>					
	1405.3	B) Random Rubble Masonry (coursed/uncoursed)					
		<i>Unit = cum</i>					
		<i>Taking output = 5 cum</i>					
		a) Material					
		Stone	cum	5.50	470.00	2585.00	
		Through and bond stone	Nos	35.00	12.00	420.00	
		(35nos.x0.24m x0.24m x0.39m = 0.79 cu.m)					
		Cement mortar 1:3 (Rate as in item 13.6 D)	cum	1.55	4779.00	7407.45	
		b) Labour					
		Mate	day	0.62	250.00	155.00	
		Mason	day	6.00	300.00	1800.00	
		Mazdoor	day	9.00	200.00	1800.00	
		c) Overheads @ 20 % on (a+b)				2833.49	
		d) Contractors profit @ 10 % on (a+b+c)				1700.09	
		Cost for 5 cum = a+b+c+d				18701.03	
		Rate per cum (a+b+c+d)/5				3740.21	
					<i>say</i>	<u>3740.20</u>	
	@	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					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	MT	4.13	7989.00	32994.57	
		Coarse sand	cum	6.75	490.00	3307.50	
		40 mm Aggregate	cum	8.10	594.00	4811.40	
		20 mm Aggregate	cum	4.05	726.00	2940.30	
		10 mm Aggregate	cum	1.35	1650.00	2227.50	
		b) Labour					
		Mate	day	0.86	250.00	215.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 63 KVA	hour	6.00	495.00	2970.00	
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>3,683.00</i>			
		d) Formwork @ 4% on cost of concrete i.e. cost of material, labour and machinery				2209.45	
		e) Overheads @ 20 % on (a+b+c+d)				11489.14	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				6893.49	
		Cost for 15 cum = a+b+c+d+e+f				75828.35	
		Rate per cum (a+b+c+d+e+f)/15				5055.22	
					<i>say</i>	<u>5055.20</u>	
	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					
		<i>Unit : cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	MT	5.16	7989.00	41223.24	
		Coarse sand	cum	6.75	490.00	3307.50	
		40 mm Aggregate	cum	5.40	594.00	3207.60	
		20 mm Aggregate	cum	5.40	726.00	3920.40	
		10 mm Aggregate	cum	2.70	1650.00	4455.00	
		b) Labour					
		Mate	day	0.86	250.00	215.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 33 KVA	hour	6.00	370.00	2220.00	

		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4,288.00			
		d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				2572.75	
		e) Overhead charges @ 20 % on (a+b+c+d)				13378.30	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				8026.98	
		Cost for 15 cum = a+b+c+d+e+f				88296.77	
		Rate per cum = (a+b+c+d+e+f)/15				5886.45	
					say	5886.45	
12.8	C	RCC Grade M20					
		Unit = cum					
	Case I	Using concrete mixer					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	5.21	7989.00	41622.69	
		Coarse sand	cum	6.75	490.00	3307.50	
		20 mm Aggregate	cum	8.10	726.00	5880.60	
		10 mm Aggregate	cum	5.40	1650.00	8910.00	
		b) Labour					
		Male	day	0.86	250.00	215.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 33 KVA	hour	6.00	370.00	2220.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4,529.00			
		d) Formwork @ 4 per cent on (a+b+c)				2717.03	
		e) Overhead charges @ 20 % on (a+b+c+d)				14128.56	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				8477.14	
		Cost for 15 cum = a+b+c+d+e+f				93248.52	
		Rate per cum = (a+b+c+d+e+f)/15				6216.57	
					say	6216.55	
	Case II	With Batching Plant, Transit Mixer and Concrete Pump					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	41.66	7989.00	332821.74	
		Coarse Sand	cum	54.00	490.00	26460.00	
		20 mm Aggregate	cum	64.80	660.00	42768.00	
		10 mm Aggregate	cum	43.20	1500.00	64800.00	
		b) Labour					
		Male	day	0.84	250.00	210.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Lead beyond 1 km, L-lead in km	T-km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6	254.00	1524.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4,261.00			
		d) Formwork @ 4% on cost of concrete i.e. cost of material, labour and machinery				20449.75	
		e) Overheads @ 20 % on (a+b+c+d)				106338.70	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				63803.22	
		Cost for 120 cum = a+b+c+d+e+f				701835.41	
		Rate per cum = (a+b+c+d+e+f)/120				5848.63	
					say	5848.65	
12.8	D	PCC Grade M25					
		Unit = cum					
	Case I	Using concrete Mixer					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	5.99	7989.00	47854.11	
		Coarse sand	cum	6.75	490.00	3307.50	
		40 mm Aggregate	cum	5.40	594.00	3207.60	
		20 mm Aggregate	cum	5.40	726.00	3920.40	
		10 mm Aggregate	cum	2.70	1650.00	4455.00	

		b) Labour					
		Male	day	0.86	250.00	215.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 33 KVA	hour	6.00	370.00	2220.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4730.00			
		d) Formwork @ 3.75 per cent of (a+b+c)				2660.61	
		e) Overhead charges @ 20 % on (a+b+c+d)				14722.04	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				8833.23	
		Cost for 15 cum = a+b+c+d+e+f				97165.49	
		Rate per cum = (a+b+c+d+e+f)/15				6477.70	
					say	6477.70	
	Case II	With Batching Plant, Transit Mixer and Concrete Pump					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	47.95	7989.00	383072.55	
		Coarse sand	cum	54.00	490.00	26460.00	
		40 mm Aggregate	cum	43.20	540.00	23328.00	
		20 mm Aggregate	cum	43.20	660.00	28512.00	
		10 mm Aggregate	cum	21.60	1500.00	32400.00	
		b) Labour					
		Male	day	0.84	250.00	210.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6	254.00	1524.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4,485.00			
		d) Formwork @ 3.75% of cost of concrete i.e. cost of material, labour and machinery				20181.25	
		e) Overheads @ 20 % on (a+b+c+d)				111669.56	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				67001.74	
		cost of 120 cum = a+b+c+d+e+f				737019.09	
		Rate per cum (a+b+c+d+e+f)/120				6141.83	
					say	6141.80	
12.8	E	RCC Grade M25					
		Unit = cum					
	Case I	Using concrete Mixer					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.05	7989.00	48333.45	
		Coarse sand	cum	6.75	490.00	3307.50	
		20 mm Aggregate	cum	8.10	726.00	5880.60	
		10 mm Aggregate	cum	5.40	1650.00	8910.00	
		b) Labour					
		Male	day	0.86	250.00	215.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 33 KVA	hour	6.00	370.00	2220.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4,976.00			
		d) Formwork @ 3.75 per cent of a+b+c.				2798.87	
		e) Overhead charges @ 20 % on (a+b+c+d)				15487.08	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				9292.25	
		cost of 15 cum = a+b+c+d+e+f				102214.76	
		Rate per cum (a+b+c+d+e+f)/15				6814.32	
					say	6814.30	
	Case II	With Batching Plant, Transit Mixer and Concrete Pump					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	48.38	7989.00	386507.82	

		Coarse sand	cum	54.00	490.00	26460.00	
		20 mm Aggregate	cum	64.80	660.00	42768.00	
		10 mm Aggregate	cum	43.20	1500.00	64800.00	
		Admixer	Kg	193.52	50.00	9676.00	
		b) Labour					
		Mate	day	0.84	250.00	210.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader 1 cum capacity 1 cum	hour	6.00	1139.00	6834.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6.00	254.00	1524.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4,789.00			
		d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				21547.72	
		e) Overhead charges @ 20 % on (a+b+c+d)				119230.71	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				71538.42	
		cost of 120 cum = a+b+c+d+e+f				786922.67	
		Rate per cum (a+b+c+d+e+f)/120				6557.69	
					say	6557.70	
12.8	F	PCC Grade M30					
		Unit = cum					
	Case I	Using Concrete Mixer					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.08	7989.00	48573.12	
		Coarse sand	cum	6.75	490.00	3307.50	
		40 mm Aggregate	cum	5.40	594.00	3207.60	
		20 mm Aggregate	cum	5.40	726.00	3920.40	
		10 mm Aggregate	cum	2.70	1650.00	4455.00	
		b) Labour					
		Mate	day	0.86	250.00	215.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 33 KVA	hour	6.00	370.00	2220.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4,778.00			
		d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				2508.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				14835.40	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				8901.24	
		cost of 15 cum = a+b+c+d+e+f				97913.67	
		Rate per cum (a+b+c+d+e+f)/15				6527.58	
					say	6527.60	
	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	48.60	7989.00	388265.40	
		Coarse sand	cum	54.00	490.00	26460.00	
		40 mm Aggregate	cum	43.20	540.00	23328.00	
		20 mm Aggregate	cum	43.20	660.00	28512.00	
		10 mm Aggregate	cum	21.60	1500.00	32400.00	
		b) Labour					
		Mate	day	0.84	250.00	210.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6.00	254.00	1524.00	

		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		4,528.00				
		d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery						19017.58
		e) Overhead charges @ 20 % on (a+b+c+d)						112475.40
		f) Contractor's profit @ 10 % on (a+b+c+d+e)						67485.24
		cost of 120 cum = a+b+c+d+e+f						742337.61
		Rate per cum = (a+b+c+d+e+f)/120						6186.15
							<i>say</i>	6186.15
12.8	G	RCC Grade M30						
	Case I	Using Concrete Mixer						
		<i>Unit = cum</i>						
		<i>Taking output = 15 cum</i>						
		a) Material						
		Cement	MT	6.10	7989.00			48732.90
		Coarse sand	cum	6.75	490.00			3307.50
		20 mm Aggregate	cum	8.10	726.00			5880.60
		10 mm Aggregate	cum	5.40	1650.00			8910.00
		b) Labour						
		Male	day	0.86	250.00			215.00
		Mason	day	1.50	300.00			450.00
		Mazdoor	day	20.00	200.00			4000.00
		c) Machinery						
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00			1320.00
		Generator 33 KVA	hour	6.00	370.00			2220.00
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>						
								5,003.00
		d) Formwork @ 3.5 per cent on cost of concrete i.e. cost of material, labour and machinery						2626.26
		e) Overhead charges @ 20 % on (a+b+c+d)						15532.45
		f) Contractor's profit @ 10 % on (a+b+c+d+e)						9319.47
		cost of 15 cum = a+b+c+d+e+f						102514.18
		Rate per cum = (a+b+c+d+e+f)/15						6834.28
								<i>say</i>
								6834.30
	Case II	Using Batching Plant, Transit Mixer and Concrete Pump						
		<i>Unit = cum</i>						
		<i>Taking output = 120 cum</i>						
		a) Material						
		Cement	MT	48.80	7989.00			389863.20
		Coarse sand	cum	54.00	490.00			26460.00
		20 mm Aggregate	cum	64.80	660.00			42768.00
		10 mm Aggregate	cum	43.20	1500.00			64800.00
		b) Labour						
		Male	day	0.84	250.00			210.00
		Mason	day	3.00	300.00			900.00
		Mazdoor	day	18.00	200.00			3600.00
		c) Machinery						
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00			13308.00
		Generator 100 KVA	hour	6.00	693.00			4158.00
		Loader 1 cum capacity	hour	6.00	1139.00			6834.00
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00			13860.00
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00			0.00
		Concrete Pump	hour	6.00	254.00			1524.00
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>						
								4,736.00
		d) Formwork @ 3.5 per cent of cost of concrete i.e. cost of material, labour and machinery						19889.98
		e) Overhead charges @ 20 % on (a+b+c+d)						117635.04
		f) Contractor's profit @ 10 % on (a+b+c+d+e)						70581.02
		cost of 120 cum = a+b+c+d+e+f						776391.24
		Rate per cum = (a+b+c+d+e+f)/120						6469.93
								<i>say</i>
								6469.90
12.8	H	RCC Grade M35						
	Case I	Using Concrete Mixer						
		<i>Unit = cum</i>						
		<i>Taking output = 15 cum</i>						
		a) Material						
		Cement	tonne	6.33	7989.00			50570.37
		Coarse sand	cum	6.75	490.00			3307.50
		20 mm Aggregate	cum	8.10	726.00			5880.60
		10 mm Aggregate	cum	5.40	1650.00			8910.00
								M-081
								M-005
								M-053
								M-051

		b) Labour					
		Male	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>5125.00</i>			
		d) Formwork @ 3 per cent on a+b+c				2306.20	
		e) Overhead charges @ 20 % on (a+b+c+d)				15835.93	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				9501.56	
		cost of 15 cum = a+b+c+d+e+f				104517.17	
		Rate per cum = (a+b+c+d+e+f)/15				6967.81	
						<i>say</i>	<i>6967.80</i>
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>5,125.00</i>			
	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit : cum</i>					
		<i>Taking Output = 120 cum</i>					
		a) Material					
		Cement	tonne	50.64	7989.00	404562.96	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		b) Labour					
		Male	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>4859.00</i>			
		d) Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				17489.55	
		e) Overhead charges @ 20 % on (a+b+c+d)				120094.90	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				72056.94	
		cost of 120 cum = a+b+c+d+e+f				792626.35	
		Rate per cum = (a+b+c+d+e+f)/120				6605.22	
						<i>say</i>	<i>6605.20</i>
						<i>say</i>	<i>6605.20</i>
		Rate per cum (a+b+c+d)/120 Excluding OH & CP					
	Note:	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers @ 0.4% of weight of cement may be added for achieving desired slump of concrete.					
12.11	1200, 1500 & 1700	Plain/Reinforced cement concrete, in well foundation complete as per drawing and technical specification					
	C	Bottom Plug					
		Concrete to be placed using tremie pipe					
	Case I	Using Concrete Mixer					
	(i)	PCC Grade M20					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	5.55	7989.00	44338.95	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	5.40	594.00	3207.60	M-055
		20 mm Aggregate	cum	5.40	726.00	3920.40	M-053
		10 mm Aggregate	cum	2.70	1650.00	4455.00	M-051
		Admixture	Kg	18.60	50.00	930.00	M-180

		b) Labour					
		Male	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	354.00	2124.00	P&M-013
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>4700.00</i>			
	Note	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..				3241.72	
		d) Overhead charges @ 20 % on (a+b+c)				14748.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8848.82	
		cost of 15 cum = a+b+c+d+e				97337.03	
		Rate per cum = (a+b+c+d+e)/15				6489.14	
					<i>say</i>	<i>6489.15</i>	
	Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
		<i>Unit : cum</i>					
		<i>Taking Output = 120 cum</i>					
		a) Material					
		Cement	MT	44.40	7989.00	354711.60	
		Coarse sand	cum	54.00	490.00	26460.00	
		20 mm Aggregate	cum	64.80	660.00	42768.00	
		10 mm Aggregate	cum	43.20	1500.00	64800.00	
		Admixer	Kg	148.80	50.00	7440.00	
		b) Labour					
		Male	day	0.88	250.00	220.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6.00	254.00	1524.00	
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>4505.00</i>			
		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..				25044.98	
		d) Overhead charges @ 20 % on (a+b+c)				113125.72	
		e) Contractor's profit @ 10 % on (a+b+c+d)				67875.43	
		cost of 120 cum = a+b+c+d+e				746629.73	
		Rate per cum = (a+b+c+d+e)/120				6221.91	
					<i>say</i>	<i>6221.90</i>	
	(ii)	PCC Grade M25					
	Case I	Using Concrete Mixer					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	MT	5.99	7989.00	47854.11	
		Coarse sand	cum	6.75	490.00	3307.50	
		40 mm Aggregate	cum	5.40	594.00	3207.60	
		20 mm Aggregate	cum	5.40	726.00	3920.40	
		10 mm Aggregate	cum	2.70	1650.00	4455.00	
		Admixer	Kg	21.60	50.00	1080.00	
		b) Labour					
		Male	day	0.90	250.00	225.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 33 KVA	hour	6.00	370.00	2220.00	

		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	354.00	2124.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4945.00			
		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..				3424.98	
		d) Overhead charges @ 20 % on (a+b+c)				15517.72	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9310.63	
		cost of 15 cum = a+b+c+d+e				102416.94	
		Rate per cum = (a+b+c+d+e)/15				6827.80	
					say	6827.80	
	Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	47.88	7989.00	382513.32	
		Coarse sand	cum	54.00	490.00	26460.00	
		20 mm Aggregate	cum	64.80	660.00	42768.00	
		10 mm Aggregate	cum	43.20	1500.00	64800.00	
		Admixer	Kg	172.80	50.00	8640.00	
		b) Labour					
		Male	day	0.88	250.00	220.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6.00	254.00	1524.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4747.00			
		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..				26495.07	
		d) Overhead charges @ 20 % on (a+b+c)				119216.08	
		e) Contractor's profit @ 10 % on (a+b+c+d)				71529.65	
		cost of 120 cum = a+b+c+d+e				786826.11	
		Rate per cum = (a+b+c+d+e)/120				6556.88	
					say	6556.90	
	(iii)	PCC Grade M30					
	Case I	Using Concrete Mixer					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.08	7989.00	48573.12	
		Coarse sand	cum	6.75	490.00	3307.50	
		40 mm Aggregate	cum	5.40	594.00	3207.60	
		20 mm Aggregate	cum	5.40	726.00	3920.40	
		10 mm Aggregate	cum	2.70	1650.00	4455.00	
		Admixer	Kg	21.60	50.00	1080.00	
		b) Labour					
		Male	day	0.90	250.00	225.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 33 KVA	hour	6.00	370.00	2220.00	
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	354.00	2124.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4993.00			
		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..				3460.93	

		d) Overhead charges @ 20 % on (a+b+c)				15668.71	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9401.23	
		cost of 15 cum = a+b+c+d+e				103413.49	
		Rate per cum = (a+b+c+d+e)/15				6894.23	
						<i>say</i>	<u>6894.25</u>
	Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	MT	48.64	7989.00	388584.96	
		Coarse sand	cum	54.00	490.00	26460.00	
		20 mm Aggregate	cum	64.80	660.00	42768.00	
		10 mm Aggregate	cum	43.20	1500.00	64800.00	
		Admixer	Kg	172.80	50.00	8640.00	
		b) Labour					
		Mate	day	0.88	250.00	220.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6.00	254.00	1524.00	
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>4798.00</i>			
		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..				26798.65	
		d) Overhead charges @ 20 % on (a+b+c)				120491.12	
		e) Contractor's profit @ 10 % on (a+b+c+d)				72294.67	
		cost of 120 cum = a+b+c+d+e				795241.40	
		Rate per cum = (a+b+c+d+e)/120				6627.01	
						<i>say</i>	<u>6627.00</u>
	(iv)	PCC Grade M35					
	Case I	Using Concrete Mixer					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	MT	6.29	7989.00	50250.81	
		Coarse sand	cum	6.75	490.00	3307.50	
		40 mm Aggregate	cum	5.40	594.00	3207.60	
		20 mm Aggregate	cum	5.40	726.00	3920.40	
		10 mm Aggregate	cum	2.70	1650.00	4455.00	
		Admixer	Kg	21.60	50.00	1080.00	
		b) Labour					
		Mate	day	0.90	250.00	225.00	
		Mason	day	1.50	300.00	450.00	
		Mazdoor	day	20.00	200.00	4000.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
		Generator 33 KVA	hour	6.00	370.00	2220.00	
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	354.00	2124.00	
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>5105.00</i>			
		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..				3544.82	
		d) Overhead charges @ 20 % on (a+b+c)				16021.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9612.62	
		cost of 15 cum = a+b+c+d+e				105738.77	
		Rate per cum = (a+b+c+d+e)/15				7049.25	
						<i>say</i>	<u>7049.25</u>
	Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	MT	50.28	7989.00	401686.92	
		Coarse sand	cum	54.00	490.00	26460.00	

		20 mm Aggregate	cum	64.80	660.00	42768.00	
		10 mm Aggregate	cum	43.20	1500.00	64800.00	
		Admixer	Kg	172.80	50.00	8640.00	
		b) Labour					
		Male	day	0.88	250.00	220.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6.00	254.00	1524.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4907.00			
		Add 5% of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe..				27453.75	
		d) Overheads @ 20 % on (a+b+c)				123242.53	
		e) Contractors profit @ 10 % on (a+b+c+d)				73945.52	
		cost of 120 cum = a+b+c+d+e				813400.72	
		Rate per cum (a+b+c+d+e)/120				6778.34	
					Say	6778.35	
F		Well cap					
iv)		RCC Grade M35					
	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	50.64	7989.00	404562.96	
		Coarse sand	cum	54.00	490.00	26460.00	
		20 mm Aggregate	cum	64.80	660.00	42768.00	
		10 mm Aggregate	cum	43.20	1500.00	64800.00	
		b) Labour					
		Male	day	0.84	250.00	210.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader(capacity 1 cum)	hour	6.00	1139.00	6834.00	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6.00	254.00	1524.00	
		Formwork @ 3% of (a+b+c)				17489.55	
		d) Overheads @ 20 % on (a+b+c)				120094.90	
		e) Contractors profit @ 10 % on (a+b+c+d)				72056.94	
		cost of 120 cum = a+b+c+d+e				792626.35	
		Rate per cum (a+b+c+d+e)/120				6605.22	
					Say	6605.20	
	Note	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers @ 0.4% of weight of cement may be added for achieving desired slump of concrete.					
3.13	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 slumps and other deleterious matter, dressing of sides and bottom, backfilling the exc					
		i) Ordinary soil					
		Unit = cum					
		Taking output = 10 cum					
	A	Manual Means					
		(i) Depth upto 3 m					
		a) Labour					
		Male	day	0.320	250.00	80.00	L-12
		Mazdoor	day	8.000	200.00	1600.00	L-13

		b) Overheads @ 10 % on (a)				168.00	
		c) Contractors profit @ 10 % on (a+b)				184.80	
		Cost for 10 cum = a+b+c				2032.80	
		Rate per cum = (a+b+c)/10				203.28	
					<i>say</i>	<u>203.30</u>	
	Note	Cost of dewatering may be added where required upto 10 % of labour cost Assessment for dewatering shall be made as per site conditions..					
	B	Mechanical Means					
		(i) Depth upto 3 m					
		<i>Unit = cum</i>					
		<i>Taking output = 300 cum</i>					
		a) Labour					
		Male	day	0.32	250	80.00	
		Mazdoor	day	8.00	200	1600.00	
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1428	8568.00	
		c) Overheads @ 10 % on (a+b)				1024.80	
		d) Contractors profit @ 10 % on (a+b+c)				1127.28	
		Cost for 300 cum = a+b+c+d				12400.08	
		Rate per cum = (a+b+c+d)/300				41.33	
					<i>say</i>	<u>41.35</u>	
	Note	Cost of dewatering upto 5% of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
13.6	Section 1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications					
		<i>Output : MT</i>					
		<i>Taking output = 1 MT</i>					
		a) Material					
		HYSD bars including 5% overlaps and wastage	MT	1.05	38219.00	40129.95	
		Binding wire	kg	6.00	70.00	420.00	
		b) Labour for cutting, bending, shifting to site, tying and placing in position					
		Male	day	0.34	250.00	85.00	
		Blacksmith	day	2.00	300.00	600.00	
		Mazdoor	day	6.50	200.00	1300.00	
		c) Overheads @ 20 % on (a+b)				8506.99	
		d) Contractors profit @ 10 % on (a+b+c)				5104.19	
		Rate for per MT (a+b+c+d)				56146.13	
					<i>say</i>	<u>56146.15</u>	
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 II	Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	MT	40.92	7989.00	326909.88	
		Coarse sand	cum	54.00	490.00	26460.00	
		20 mm Aggregate	cum	64.80	660.00	42768.00	
		10 mm Aggregate	cum	43.20	1500.00	64800.00	
		b) Labour					
		Male	day	0.84	250.00	210.00	
		Mason	day	3.00	300.00	900.00	
		Mazdoor	day	18.00	200.00	3600.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
		Generator 100 KVA	hour	6.00	693.00	4158.00	
		Loader	hour	6.00	1139.00	6834.00	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00	13860.00	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
		Concrete Pump	hour	6.00	254.00	1524.00	
		<i>Basic Cost of Labour, Material & Mechninery (a+b+c) for 120 cum</i>			<u>505332.00</u>		

	(j)	For solid slab super-structure, 20-30% of (a+b+c)					
	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum					505332.00
		d) Formwork and staging 20 % of (a+b+c)		20.00			101066.40
		e) Overheads @ 20 % on (a+b+c+d)					121279.68
		f) Contractors profit @ 10 % on (a+b+c+d+e)					72767.81
		Cost for 15 cum = a+b+c+d+e+f					800445.89
		Rate per cum (a+b+c+d+e+f)/120					6670.38
							<i>say</i> 6670.40
	B	RCC Grade M25					
	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	MT	47.95	7989.00		383072.55
		Coarse sand	cum	54.20	490.00		26558.00
		20 mm Aggregate	cum	64.80	660.00		42768.00
		10 mm Aggregate	cum	43.20	1500.00		64800.00
		b) Labour					
		Male	day	0.84	250.00		210.00
		Mason	day	3.00	300.00		900.00
		Mazdoor	day	18.00	200.00		3600.00
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00		13308.00
		Generator 100 KVA	hour	6.00	693.00		4158.00
		Loader	hour	6.00	1139.00		6834.00
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00		13860.00
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00		0.00
		Concrete Pump	hour	6.00	254.00		1524.00
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum					561593.00
		For formwork and staging add the following:					
	(j)	For solid slab super-structure, 20-30% of (a+b+c)					
	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum					561593.00
		d) Formwork and staging 20 % of (a+b+c)		20.00			112318.60
		e) Overheads @ 20 % on (a+b+c+d)					134782.32
		f) Contractors profit @ 10 % on (a+b+c+d+e)					80869.39
		Cost for 15 cum= a+b+c+d+e+f					889563.31
		Rate per cum (a+b+c+d+e+f)/120					7413.03
							<i>say</i> 7413.05
	C	RCC Grade M 30					
	Case II	Using Batching Plant, Transit Mixer and Concrete Pump.					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	MT	48.79	7989.00		389783.31
		Coarse sand	cum	54.60	490.00		26754.00
		20 mm Aggregate	cum	64.80	660.00		42768.00
		10 mm Aggregate	cum	43.20	1500.00		64800.00
		b) Labour					
		Male	day	0.88	250.00		220.00
		Mason	day	3.00	300.00		900.00
		Mazdoor	day	19.00	200.00		3800.00
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00		13308.00
		Generator 100 KVA	hour	6.00	693.00		4158.00
		Loader	hour	6.00	1139.00		6834.00
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00		13860.00
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00		0.00

	Concrete Pump	hour	6.00	254.00	1524.00	
	Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		568710.00			
	For formwork and staging add the following:					
(i)	For solid slab super-structure, 20-30% of (a+b+c)					
(p)	Height upto 5m					
	Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				568710.00	
	d) Formwork and staging 20 % of (a+b+c)		20.00		113742.00	
	e) Overheads @ 20 % on (a+b+c+d)				136490.40	
	f) Contractors profit @ 10 % on (a+b+c+d+e)				81894.24	
	Cost for 15 cum = a+b+c+d+e+f				900836.64	
	Rate per cum (a+b+c+d+e+f)/120				7506.97	
				say	7506.95	
	Rate per cum (a+b+c+d)/120 (including formwork and excluding OH & CP)				5687.00	
	Rate per cum (a+b+c+d)/120 (excluding formwork and Excluding OH & CP)				4739.00	
E	PSC Grade M-40					
Case 1	Using concret mixer.					
	Unit = 1 cum					
	Taking output = 15 cum					
	a) Material					
	Cement	MT	6.45	7989.00	51529.05	
	Coarse sand	cum	6.75	490.00	3307.50	
	20 mm Aggregate	cum	8.10	726.00	5880.60	
	10 mm Aggregate	cum	5.40	1650.00	8910.00	
	Admixture @ 0.4% of cement	kg	25.80	50.00	1290.00	
	b) Labour					
	Male	day	0.96	250.00	240.00	
	Mason	day	2.00	300.00	600.00	
	Mazdoor	day	22.00	200.00	4400.00	
	c) Machinery					
	Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	
	Generator 33 KVA	hour	6.00	370.00	2220.00	
	Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		79698.00			
	For formwork and staging add the following:					
(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				79698.00	
	d) Formwork and staging 20 per cent of (a+b+c)				15939.60	
	e) Overhead charges @ 20 % on (a+b+c+d)				19127.52	
	f) Contractor's profit @ 10 % on (a+b+c+d+e)				11476.51	
	Cost for 15 cum = a+b+c+d+e+f				126241.63	
	Rate per cum = (a+b+c+d+e+f)/15				8416.11	
				say	8416.10	
Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
	Unit = cum					
	Taking output = 120 cum					
	a) Material					
	Cement	MT	51.60	7989.00	412232.40	
	Coarse sand	cum	54.00	490.00	26460.00	
	20 mm Aggregate	cum	64.80	660.00	42768.00	
	10 mm Aggregate	cum	43.20	1500.00	64800.00	
	Admixture @ 0.4% of cement	kg	206.40	50.00	10320.00	
	b) Labour					
	Male	day	0.94	250.00	235.00	
	Mason	day	3.50	300.00	1050.00	
	Mazdoor	day	20.00	200.00	4000.00	
	c) Machinery					
	Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	
	Generator 100 KVA	hour	6.00	693.00	4158.00	
	Loader	hour	6.00	1139.00	6834.00	
	Transit Mixer (capacity 4.0 cu.m)					
	Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00	13860.00	
	Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	0.00	0.00	L= 0
	Concrete Pump	hour	6.00	254.00	1524.00	
	Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		601550.00			
	For formwork and staging add the following:					
(i)	For solid slab super-structure, 18-28% of (a+b+c)					

	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
		d) Formwork and staging 18 % of (a+b+c)		18.00		108279.00	
		e) Overheads @ 20 % on (a+b+c+d)				141965.80	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				85179.48	
		Cost for 15 cum= a+b+c+d+e+f				936974.28	
		Rate per cum (a+b+c+d+e+f)/120				7808.12	
					say	<u>7808.10</u>	
	Note	1.Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers conforming IS: 9103 @ 0.4% 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					
		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	A) 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% for laps and wastage	MT	1.05	38219.00	40129.95	
		Binding wire	Kg	8.00	70.00	560.00	
		b) Labour for cutting, bending, tying and placing in position					
		Mate	day	0.44	250.00	110.00	
		Blacksmith	day	3.00	300.00	900.00	
		Mazdoor	day	8.00	200.00	1600.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		43300.00			
		c) Overhead charges @ 20 % on (a+b)				8659.99	
		d) Contractor's profit @ 10 % on (a+b+c)				5195.99	
		Rate per MT = a+b+c+d				57155.93	
					say	<u>57155.95</u>	

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					
		<i>Unit = cum</i>					
		<i>Taking output = 5.5 cum</i>					
		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	554.00	182.82	P&M-048
		Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.330	1139.00	375.87	P&M-017
		b) Overhead charges @ 10 % on (a)				55.87	
		c) Contractor's profit @ 10 % on (a+b)				61.46	
		Cost for 5.5 cum = a+b+c				676.01	
		Rate per cum = (a+b+c)/ 5.5				122.91	
	Note	Unloading will be by tipping.			say	<u>122.90</u>	
1.2		Loading and Unloading of Boulders by Manual Means					
		<i>Unit = cum</i>					
		<i>Taking output = 5.5 cum</i>					
		a) Labour					
		Mate	day	0.110	250.00	27.50	L-12
		Mazdoor for loading and unloading	day	0.750	200.00	150.00	L-13
		b) Machinery					
		Tipper 5.5 tonne capacity	hour	0.750	554.00	415.50	P&M-048
		c) Overhead charges @ 10 % on (a+b)				59.30	
		d) Contractor's profit @ 10 % on (a+b+c)				65.23	
		Cost for 5.5 cum = a+b+c+d				717.53	
		Rate per cum = (a+b+c+d)/5.5				130.46	
	Note	Unloading will be by tipping.			say	<u>130.45</u>	
1.3		Loading and Unloading of Cement or Steel by Manual Means and Stacking.					
		<i>Unit = tonne</i>					
		<i>Taking output = 10 tonnes</i>					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor for loading and unloading	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Truck 10 tonne capacity	hour	2.000	444.00	888.00	P&M-057
		c) Overhead charges @ 10 % on (a+b)				130.80	
		d) Contractor's profit @ 10 % on (a+b+c)				143.88	
		Cost for 10 tonnes = a+b+c+d				1582.68	
		Rate per tonnes = (a+b+c+d)/10				158.27	
					say	<u>158.25</u>	
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>TY</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	554.00	221.60	P&M-048
		Time taken for empty return trip.	hour	0.290	554.00	160.66	P&M-048
		b) Overhead charges @ 10 % on (a)				38.23	
		c) Contractor's profit @ 10 % on (a+b)				42.05	
		cost for 100 t.km = a+b+c				462.53	
		Rate per t.km = (a+b+c)/100				4.63	
					say	<u>4.65</u>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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	554.00	277.00	P&M-048
		Time taken for empty return trip	hour	0.330	554.00	182.82	P&M-048
		b) Overhead charges @ 10 % on (a)				45.98	
		c) Contractor's profit @ 10 % on (a+b)				50.58	
		Cost for 100 t .km = a+b+c				556.38	
		Rate per t.Km = (a+b+c)/100				5.56	
					say	<u>5.55</u>	
1.4		(iii) Katcha Track and Track in River Bed/Nallah Bed and Choe 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	554.00	554.00	P&M-048
		Time taken for empty return trip	hour	0.670	554.00	371.18	P&M-048
		b) Overhead charges @ 10 % on (a)				92.52	
		c) Contractor's profit @ 10 % on (a+b)				101.77	
		Cost for 100 t .km = a+b+c				1119.47	
		Rate per t.Km = (a+b+c)/100				11.19	
					say	<u>11.20</u>	

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	250.00	5.00	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	200.00	120.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	388.00	38.80	P&M-053
		c) Overhead charges @ 10 % on (a+b)				16.38	
		d) Contractor's profit @ 10 % on (a+b+c)				18.02	
		Rate for each tree = a+b+c+d				198.20	
						say 198.20	
2.1	(ii)	Girth from 600 mm to 900 mm					
		a) Labour					
		Mate	day	0.040	250.00	10.00	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	200.00	180.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.300	388.00	116.40	P&M-053
		c) Overhead charges @ 10 % on (a+b)				30.64	
		d) Contractor's profit @ 10 % on (a+b+c)				33.70	
		Rate for each tree = a+b+c+d				370.74	
						say 370.75	
2.1	(iii)	Girth from 900 mm to 1800 mm					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.400	388.00	155.20	P&M-053
		c) Overhead charges @ 10 % on (a+b)				57.52	
		d) Contractor's profit @ 10 % on (a+b+c)				63.27	
		Rate for each tree = a+b+c+d				695.99	
						say 696.00	
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	250.00	500.00	L-12
		Mazdoor	day	50.000	200.00	10000.00	L-13
		b) Overhead charges @ 10 % on (a)				1050.00	
		c) Contractor's profit @ 10 % on (a+b)				1155.00	
		Rate per Hectare = a+b+c				12705.00	
						say 12705.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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 us					
		<i>Unit = Hectare</i>					
		<i>Taking output = 1 Hectare</i>					
	(i)	By Manual Means:-					
	A	In area of light jungle					
		a) Labour					
		Mate	day	6.000	250.00	1500.00	L-12
		Mazdoor	day	150.000	200.00	30000.00	L-13
		b) Machinery					
		Tractor-trolley	hour	1.000	388.00	388.00	P&M-053
		c) Overhead charges @ 10 % on (a+b)				3188.80	
		d) Contractor's profit @ 10 % on (a+b+c)				3507.68	
		Rate per Hectare = a+b+c+d				38584.48	
					<i>say</i>	<i>38584.50</i>	
2.3 (i)	B	In area of thorny jungle					
		a) Labour					
		Mate	day	8.000	250.00	2000.00	L-12
		Mazdoor	day	200.000	200.00	40000.00	L-13
		b) Machinery					
		Tractor-trolley	hour	2.000	388.00	776.00	P&M-053
		c) Overhead charges @ 10 % on (a+b)				4277.60	
		d) Contractor's profit @ 10 % on (a+b+c)				4705.36	
		Rate per Hectare = a+b+c+d				51758.96	
					<i>say</i>	<i>51758.95</i>	
2.3	(ii)	By Mechanical Means					
	A	In area of light jungle					
		a) Labour					
		Mate	day	0.160	250.00	40.00	L-12
		Mazdoor	day	4.000	200.00	800.00	L-13
		b) Machinery					
		Dozer 80 HP with attachment for removal of trees & stumps	hour	10.000	3286.00	32860.00	P&M-014
		Tractor-trolley	hour	1.000	388.00	388.00	P&M-053
		c) Overhead charges @ 10 % on (a+b)				3408.80	
		d) Contractor's profit @ 10 % on (a+b+c)				3749.68	
		Rate per Hectare = a+b+c+d				41246.48	
					<i>say</i>	<i>41246.50</i>	
2.3 (ii)	B	In area of thorny jungle					
		a) Labour					
		Mate	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Dozer 80 HP with attachment for removal of trees & stumps	hour	12.000	3286.00	39432.00	P&M-014
		Tractor-trolley	hour	1.500	388.00	582.00	P&M-053
		c) Overhead charges @ 10 % on (a+b)				4127.40	
		d) Contractor's profit @ 10 % on (a+b+c)				4540.14	
		Rate per Hectare = a+b+c+d				49941.54	
					<i>say</i>	<i>49941.55</i>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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 un					
		<i>Unit = cum</i>					
		<i>Taking output = 1.25 cum</i>					
	(i)	Lime /Cement Concrete					
	I	By Manual Means					
	A	Lime Concrete, cement concrete grade M-10 and below					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor for dismantling and loading	day	1.000	200.00	200.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c) Overhead charges @ 10 % on (a+b)				31.48	
		d) Contractor's profit @ 10 % on (a+b+c)				34.62	
		Cost for 1.25 cum = a+b+c+d				380.86	
		Rate per cum = (a+b+c+d)/ 1.25				304.69	
					say	<u>304.70</u>	
2.4 (i)	B	Cement Concrete Grade M-15 & M-20					
		a) Labour					
		Mate	day	0.050	250.00	12.50	L-12
		Mazdoor for dismantling and loading	day	1.250	200.00	250.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c) Overhead charges @ 10 % on (a+b)				36.73	
		d) Contractor's profit @ 10 % on (a+b+c)				40.40	
		Cost for 1.25 cum = a+b+c+d				444.38	
		Rate per cum = (a+b+c+d)/ 1.25				355.51	
					say	<u>355.50</u>	
2.4 (i)	C	Prestressed / Reinforced cement concrete grade M-20 & above					
		a) Labour					
		Mate	day	0.150	250.00	37.50	L-12
		Blacksmith	day	0.250	300.00	75.00	L-02
		Mazdoor for dismantling, loading and unloading	day	3.500	200.00	700.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c) Overhead charges @ 10 % on (a+b)				91.73	
		d) Contractor's profit @ 10 % on (a+b+c)				100.90	
		Cost for 1.25 cum = a+b+c+d				1109.88	
		Rate per cum = (a+b+c+d)/ 1.25				887.91	
					say	<u>887.90</u>	
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	250.00	5.00	L-12
		Mazdoor for loading and unloading	day	0.250	200.00	50.00	L-13
		Mazdoor with Pneumatic breaker	day	0.250	250.00	62.50	L-14
		b) Machinery					
		Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.5 cum per hour	hour	0.670	469.00	314.23	P&M-001
		Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c) Overhead charges @ 10 % on (a+b)				53.65	
		d) Contractor's profit @ 10 % on (a+b+c)				59.01	
		Cost for 1.25 cum = a+b+c+d				649.15	
		Rate per cum = (a+b+c+d)/ 1.25				519.32	
					say	<u>519.30</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4 II		B	Prestressed / reinforced cement concrete grade M-20 & above					
		a)	Labour					
			Mate	day	0.050	250.00	12.50	L-12
			Mazdoor with Pneumatic breaker	day	0.660	250.00	165.00	L-14
			Blacksmith	day	0.250	300.00	75.00	L-02
			Mazdoor for loading and unloading	day	0.250	200.00	50.00	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.00 cum per hour	hour	1.000	469.00	469.00	P&M-001
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				87.63	
		d)	Contractor's profit @ 10 % on (a+b+c)				96.39	
			Cost for 1.25 cum = a+b+c+d				1060.27	
			Rate per cum = (a+b+c+d)/ 1.25				848.22	
						say	<u>848.20</u>	
2.4		(ii)	Dismantling Brick / Tile work					
		A	In lime mortar					
		a)	Labour					
			Mate	day	0.020	250.00	5.00	L-12
			Mazdoor for dismantling, loading and unloading	day	0.500	200.00	100.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				20.98	
		d)	Contractor's profit @ 10 % on (a+b+c)				23.07	
			Cost for 1.25 cum = a+b+c+d				253.81	
			Rate per cum = (a+b+c+d)/ 1.25				203.05	
						say	<u>203.05</u>	
2.4 (ii)		B	In cement mortar					
		a)	Labour					
			Mate	day	0.030	250.00	7.50	L-12
			Mazdoor for dismantling, loading and unloading	day	0.750	200.00	150.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				26.23	
		d)	Contractor's profit @ 10 % on (a+b+c)				28.85	
			Cost for 1.25 cum = a+b+c+d				317.33	
			Rate per cum = (a+b+c+d)/ 1.25				253.87	
						say	<u>253.90</u>	
2.4 (ii)		C	In mud mortar					
		a)	Labour					
			Mate	day	0.016	250.00	4.00	L-12
			Mazdoor for dismantling and loading	day	0.400	200.00	80.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				18.88	
		d)	Contractor's profit @ 10 % on (a+b+c)				20.76	
			Cost for 1.25 cum = a+b+c+d				228.40	
			Rate per cum = (a+b+c+d)/ 1.25				182.72	
						say	<u>182.70</u>	
2.4 (ii)		D	Dry brick pitching or brick soling					
		a)	Labour					
			Mate	day	0.014	250.00	3.50	L-12
			Mazdoor for Dismantling, loading and unloading	day	0.350	200.00	70.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				17.83	
		d)	Contractor's profit @ 10 % on (a+b+c)				19.61	
			Cost for 1.25 cum = a+b+c+d				215.69	
			Rate per cum = (a+b+c+d)/ 1.25				172.56	
						say	<u>172.55</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4		(iii)	Dismantling Stone Masonry					
		A	Rubble stone masonry in lime mortar					
		a)	Labour					
			Mate	day	0.024	250.00	6.00	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.600	200.00	120.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				23.08	
		d)	Contractor's profit @ 10 % on (a+b+c)				25.38	
			Cost for 1.25 cum = a+b+c+d				279.22	
			Rate per cum = (a+b+c+d)/ 1.25				223.38	
						say	<u>223.40</u>	
2.4 (iii)		B	Rubble stone masonry in cement mortar.					
		a)	Labour					
			Mate	day	0.030	250.00	7.50	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.750	200.00	150.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				26.23	
		d)	Contractor's profit @ 10 % on (a+b+c)				28.85	
			Cost for 1.25 cum = a+b+c+d				317.33	
			Rate per cum = (a+b+c+d)/ 1.25				253.87	
						say	<u>253.90</u>	
2.4 (iii)		C	Rubble Stone Masonry in mud mortar.					
		a)	Labour					
			Mate	day	0.020	250.00	5.00	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.500	200.00	100.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				20.98	
		d)	Contractor's profit @ 10 % on (a+b+c)				23.07	
			Cost for 1.25 cum = a+b+c+d				253.81	
			Rate per cum = (a+b+c+d)/ 1.25				203.05	
						say	<u>203.05</u>	
2.4 (iii)		D	Dry rubble masonry					
		a)	Labour					
			Mate	day	0.018	250.00	4.50	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.450	200.00	90.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				19.93	
		d)	Contractor's profit @ 10 % on (a+b+c)				21.92	
			Cost for 1.25 cum = a+b+c+d				241.10	
			Rate per cum = (a+b+c+d)/ 1.25				192.88	
						say	<u>192.90</u>	
2.4 (iii)		E	Dismantling stone pitching/ dry stone spalls.					
		a)	Labour					
			Mate	day	0.016	250.00	4.00	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.400	200.00	80.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				18.88	
		d)	Contractor's profit @ 10 % on (a+b+c)				20.76	
			Cost for 1.25 cum = a+b+c+d				228.40	
			Rate per cum = (a+b+c+d)/ 1.25				182.72	
						say	<u>182.70</u>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4 (iii)	F	Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.					
		a) Labour					
		Mate	day	0.020	250.00	5.00	L-12
		Mazdoor for dismantling, loading and unloading	day	0.500	200.00	100.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c) Overhead charges @ 10 % on (a+b)				20.98	
		d) Contractor's profit @ 10 % on (a+b+c)				23.07	
		Cost for 1.25 cum = a+b+c+d				253.81	
		Rate per cum = (a+b+c+d)/ 1.25				203.05	
					say	203.05	
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	250.00	15.00	L-12
		Carpenter	day	0.500	300.00	150.00	L-04
		Mazdoor for dismantling, loading and unloading.	day	1.000	200.00	200.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	388.00	104.76	P&M-053
		c) Overhead charges @ 10 % on (a+b)				46.98	
		d) Contractor's profit @ 10 % on (a+b+c)				51.67	
		Cost for 1.25 cum = a+b+c+d				568.41	
		Rate per cum = (a+b+c+d)/ 1.25				454.73	
					say	454.70	
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					
		Taking output = 1 tonne					
	A	Including dismembering					
		a) Labour					
		Mate	day	0.140	250.00	35.00	L-12
		Blacksmith	day	1.000	300.00	300.00	L-02
		Mazdoor for dismantling, loading and unloading	day	2.500	200.00	500.00	L-13
		Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				20.88	
		b) Machinery					
		Tractor-trolley	hour	0.170	388.00	65.96	P&M-053
		c) Overhead charges @ 10 % on (a+b)				92.18	
		d) Contractor's profit @ 10 % on (a+b+c)				101.40	
		Rate per tonne = a+b+c+d				1115.42	
					say	1115.40	
2.4 (v)	B	Excluding dismembering.					
		a) Labour					
		Mate	day	0.220	250.00	55.00	L-12
		Mazdoor for dismantling, loading and unloading	day	2.000	200.00	400.00	L-13
		Blacksmith	day	0.500	300.00	150.00	L-02
		Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				15.13	
		b) Machinery					
		Tractor-trolley	hour	0.170	388.00	65.96	P&M-053
		c) Overhead charges @ 10 % on (a+b)				68.61	
		d) Contractor's profit @ 10 % on (a+b+c)				75.47	
		Rate per tonne = a+b+c+d				830.16	
					say	830.15	
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	250.00	2.50	L-12
		Blacksmith	day	0.130	300.00	39.00	L-02
		Mazdoor	day	0.130	200.00	26.00	L-13
		b) Overhead charges @ 10 % on (a)				6.75	
		c) Contractor's profit @ 10 % on (a+b)				7.43	
		Cost for 10 rivets = a+b+c				81.68	
		Rate for each rivet = (a+b+c)/10				8.17	
					say	8.15	
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	250.00	35.00	L-12

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	3.500	200.00	700.00	L-13
			b) Overhead charges @ 10 % on (a)				73.50	
			c) Contractor's profit @ 10 % on (a+b)				80.85	
			Rate per1000 Nos = a+b+c				889.35	
						say	<u>889.35</u>	
2.4 (iv)		B	In mud mortar					
			a) Labour					
			Mate	day	0.050	250.00	12.50	L-12
			Mazdoor	day	1.250	200.00	250.00	L-13
			b) Overhead charges @ 10 % on (a)				26.25	
			c) Contractor's profit @ 10 % on (a+b)				28.88	
			Rate per1000 Nos = a+b+c				317.63	
						say	<u>317.60</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	250.00	15.00	L-12
			Mazdoor	day	1.400	200.00	280.00	L-13
			b) Overhead charges @ 10 % on (a)				29.50	
			c) Contractor's profit @ 10 % on (a+b)				32.45	
			Rate per cum = a+b+c				356.95	
						say	<u>356.95</u>	
2.4 (vii)		B	In Mud mortar					
			a) Labour					
			Mate	day	0.010	250.00	2.50	L-12
			Mazdoor	day	0.300	200.00	60.00	L-13
			b) Overhead charges @ 10 % on (a)				6.25	
			c) Contractor's profit @ 10 % on (a+b)				6.88	
			Rate per cum = a+b+c				75.63	
						say	<u>75.60</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	250.00	40.00	L-12
			Mazdoor for scarping and loading	day	4.000	200.00	800.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.320	388.00	124.16	P&M-053
			c) Overhead charges @ 10 % on (a+b)				96.42	
			d) Contractor's profit @ 10 % on (a+b+c)				106.06	
			Cost for 100 sqm = a+b+c+d				1166.63	
			Rate per sqm = (a+b+c+d)/100				11.67	
						say	<u>11.65</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4		(ix)	Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works.					
			<i>Unit = metre</i>					
			<i>Taking output = 1 metre</i>					
		A	Up to 600 mm dia					
		a)	Labour					
			Mate	day	0.020	250.00	5.00	L-12
			Mazdoor	day	0.520	200.00	104.00	L-13
		b)	Overhead charges @ 10 % on (a)				10.90	
		c)	Contractor's profit @ 10 % on (a+b)				11.99	
			Rate per metre = a+b+c				131.89	
						<i>say</i>	<u>131.90</u>	
2.4 (ix)		B	Above 600 mm to 900 mm dia					
		a)	Labour					
			Mate	day	0.030	250.00	7.50	L-12
			Mazdoor	day	0.700	200.00	140.00	L-13
		b)	Overhead charges @ 10 % on (a)				14.75	
		c)	Contractor's profit @ 10 % on (a+b)				16.23	
			Rate per metre = a+b+c				178.48	
						<i>say</i>	<u>178.50</u>	
2.4 (ix)		C	Above 900 mm					
		a)	Labour					
			Mate	day	0.050	250.00	12.50	L-12
			Mazdoor	day	1.200	200.00	240.00	L-13
		b)	Overhead charges @ 10 % on (a)				25.25	
		c)	Contractor's profit @ 10 % on (a+b)				27.78	
			Rate per metre = a+b+c				305.53	
						<i>say</i>	<u>305.50</u>	
		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					
			<i>Unit = cum</i>					
			<i>Taking output = 1 cum</i>					
		I	By Manual Means					
		A	Bituminous courses					
		a)	Labour					
			Mate	day	0.060	250.00	15.00	L-12
			Mazdoor for dismantling, loading and unloading	day	1.500	200.00	300.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.380	388.00	147.44	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				46.24	
		d)	Contractor's profit @ 10 % on (a+b+c)				50.87	
			Rate per cum = a+b+c+d				559.55	
						<i>say</i>	<u>559.55</u>	
2.5 I		B	Granular courses					
		a)	Labour					
			Mate	day	0.040	250.00	10.00	L-12
			Mazdoor for dismantling, loading and unloading.	day	1.000	200.00	200.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	0.330	388.00	128.04	P&M-053
		c)	Overhead charges @ 10 % on (a+b)				33.80	
		d)	Contractor's profit @ 10 % on (a+b+c)				37.18	
			Rate per cum = a+b+c+d				409.03	
						<i>say</i>	<u>409.05</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.5		II	By Mechanical Means					
		A	Bituminous course					
			a) Labour					
			Mate	day	0.010	250.00	2.50	L-12
			Mazdoor	day	0.300	200.00	60.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.380	388.00	147.44	P&M-053
			Farm tractor with ripper @ 60 cum per hour	hour	0.017	343.00	5.83	P&M-055
			c) Overhead charges @ 10 % on (a+b)				21.58	
			d) Contractor's profit @ 10 % on (a+b+c)				23.73	
			Rate per cum = a+b+c+d				261.08	
							<i>say</i>	<u>261.10</u>
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 serv					
			<i>Unit = cum</i>					
			<i>Taking output = 1 cum</i>					
			a) Labour					
			Mate	day	0.030	250.00	7.50	L-12
			Semi skilled mazdoor for operating pneumatic tools	day	0.500	250.00	125.00	L-14
			Mazdoors as helpers including loading and unloading	day	0.500	200.00	100.00	L-13
			b) Machinery					
			Air compressor 250 cfm with two leads for pneumatic cutters/ hammers @ 1 cum per hour	hour	1.000	469.00	469.00	P&M-001
			Tractor-trolley	hour	0.400	388.00	155.20	P&M-053
			Joint Cutting Machine with 2-3 blades	hour	1.000	88.00	88.00	P&M-083
			c) Overhead charges @ 10 % on (a+b)				94.47	
			d) Contractor's profit @ 10 % on (a+b+c)				103.92	
			Rate per cum = a+b+c+d				1143.09	
							<i>say</i>	<u>1143.10</u>
		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.					
			<i>Unit = running metre</i>					
			<i>Taking output = 1 metre</i>					
			a) Labour					
			Mate	day	0.006	250.00	1.50	L-12
			Mazdoor including loading and unloading	day	0.150	200.00	30.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.050	388.00	19.40	P&M-053
			c) Overhead charges @ 10 % on (a+b)				5.09	
			d) Contractor's profit @ 10 % on (a+b+c)				5.60	
			Rate per metre = a+b+c+d				61.59	
							<i>say</i>	<u>61.60</u>
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					
			<i>Unit = running metre</i>					
			<i>Taking output = 10 metre</i>					
			a) Labour					
			Mate	day	0.010	250.00	2.50	L-12
			Mazdoor including loading and unloading	day	0.150	200.00	30.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.200	388.00	77.60	P&M-053
			c) Overhead charges @ 10 % on (a+b)				11.01	
			d) Contractor's profit @ 10 % on (a+b+c)				12.11	
			Cost for 10 m = a+b+c+d				133.22	
			Rate per metre = (a+b+c+d)/10				13.32	
							<i>say</i>	<u>13.30</u>
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					
			<i>Unit = running metre</i>					
			<i>Taking output = 10 metre</i>					
			a) Labour					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mate	day	0.015	250.00	3.75	L-12
		Mazdoor including loading and unloading	day	0.225	200.00	45.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.300	388.00	116.40	P&M-053
		c) Overhead charges @ 10 % on (a+b)				16.52	
		d) Contractor's profit @ 10 % on (a+b+c)				18.17	
		Cost for 10 m = a+b+c+d				199.83	
		Rate per metre = (a+b+c+d)/10				19.98	
					say	20.00	
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.					
		<i>Unit = Each</i>					
		<i>Taking output = one KM stone</i>					
	A	5th KM stone					
		Quantity of cement concrete = 0.392 cum					
		a) Labour					
		Mate	day	0.130	250.00	32.50	L-12
		Mazdoor	day	0.750	200.00	150.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.150	388.00	58.20	P&M-053
		c) Overhead charges @ 10 % on (a+b)				24.07	
		d) Contractor's profit @ 10 % on (a+b+c)				26.48	
		Rate for one 5th KM stone = a+b+c+d				291.25	
					say	291.25	
	B	Ordinary KM Stone					
		Quantity of cement concrete = 0.269 cum					
		a) Labour					
		Mate	day	0.020	250.00	5.00	L-12
		Mazdoor	day	0.500	200.00	100.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	388.00	38.80	P&M-053
		c) Overhead charges @ 10 % on (a+b)				14.38	
		d) Contractor's profit @ 10 % on (a+b+c)				15.82	
		Rate for one ordinary KM stone = a+b+c+d				174.00	
					say	174.00	
	C	Hectometre Stone					
		Quantity of cement concrete = 0.048 cum					
		a) Labour					
		Mate	day	0.004	250.00	1.00	L-12
		Mazdoor	day	0.100	200.00	20.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.020	388.00	7.76	P&M-053
		c) Overhead charges @ 10 % on (a+b)				2.88	
		d) Contractor's profit @ 10 % on (a+b+c)				3.16	
		Rate for one Hectometre stone = a+b+c+d				34.80	
					say	34.80	
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 uns					
		<i>Unit = running metre</i>					
		<i>Taking output = 30 metres</i>					
		a) Labour					
		Mate	day	0.150	250.00	37.50	L-12
		Mazdoor including loading and unloading	day	3.000	200.00	600.00	L-13
		Blacksmith	day	0.750	300.00	225.00	L-02
		b) Machinery					
		Tractor-trolley	hour	0.150	388.00	58.20	P&M-053
		c) Overhead charges @ 10 % on (a+b)				92.07	
		d) Contractor's profit @ 10 % on (a+b+c)				101.28	
		Cost for 30 metres = a+b+c+d				1114.05	
		Rate per metre = (a+b+c+d)/30				37.13	
					say	37.15	
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					
		<i>Unit = running metre</i>					
		<i>Taking output = 10 metres</i>					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.	
		a) Labour						
		Mate	day	0.090	250.00	22.50	L-12	
		Mazdoor	day	2.000	200.00	400.00	L-13	
		Plumber	day	0.250	300.00	75.00	L-02	
		b) Machinery						
		Truck 10 tonne capacity	hour	0.250	444.00	111.00	P&M-057	
		Light Crane 3 tonne capacity	hour	0.500	354.00	177.00	P&M-013	
		c) Overhead charges @ 10 % on (a+b)				78.55		
		d) Contractor's profit @ 10 % on (a+b+c)				86.41		
		Cost for 10 metres = a+b+c+d				950.46		
		Rate per metre = (a+b+c+d)/10				95.05		
					say	95.05		
		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 ear						
		<i>Unit = running metre</i>						
		<i>Taking output = 10 metres</i>						
		a) Labour						
		Mate	day	0.100	250.00	25.00	L-12	
		Mazdoor	day	2.500	200.00	500.00	L-13	
		b) Machinery						
		Crane 5 tonne capacity	hour	0.300	605.00	181.50	P&M-070	
		Truck flat body 10 tonne	hour	1.000	444.00	444.00	P&M-057	
		c) Overhead charges @ 10 % on (a+b)				115.05		
		d) Contractor's profit @ 10 % on (a+b+c)				126.56		
		Cost for 10 metres = a+b+c+d				1392.11		
		Rate per metre = (a+b+c+d)/10				139.21		
					say	139.20		
		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						
		<i>Unit = each</i>						
		<i>Taking output = 30 Nos</i>						
		a) Labour						
		Mate	day	0.480	250.00	120.00	L-12	
		Mazdoor	day	10.000	200.00	2000.00	L-13	
		Electrician/Lineman	day	2.000	300.00	600.00	L-02	
		b) Machinery						
		Tractor-trolley	hour	1.500	388.00	582.00	P&M-053	
		c) Overhead charges @ 10 % on (a+b)				330.20		
		d) Contractor's profit @ 10 % on (a+b+c)				363.22		
		Cost for 30 poles = a+b+c+d				3995.42		
		Rate per pole = (a+b+c+d)/30				133.18		
					say	133.20		

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.					
			<i>Unit = cum</i>					
			<i>Taking output = 120 cum</i>					
			a) Labour					
			Mate	day	1.800	250.00	450.00	L-12
			Mazdoor	day	45.000	200.00	9000.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	444.00	4440.00	P&M-057
			c) Overhead charges @ 10 % on (a+b)				1389.00	
			d) Contractor's profit @ 10 % on (a+b+c)				1527.90	
			Cost of 120 cum = a+b+c+d				16806.90	
			Rate per cum = (a+b+c+d)/120				140.06	
						<i>say</i>	<i>140.05</i>	
		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.					
3.2	301		Excavation in Ordinary Rock by Manual Means					
			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					
			<i>Unit = cum</i>					
			<i>Taking output = 120 cum</i>					
			a) Labour					
			Mate	day	2.800	250.00	700.00	L-12
			Mazdoor	day	70.000	200.00	14000.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	444.00	4440.00	P&M-057
			c) Overhead charges @ 10 % on (a+b)				1914.00	
			d) Contractor's profit @ 10 % on (a+b+c)				2105.40	
			Cost for 120 cum = a+b+c+d				23159.40	
			Rate per cum = (a+b+c+d)/120				193.00	
						<i>say</i>	<i>193.00</i>	
		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.					
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, gr					
			<i>Unit = cum</i>					
			<i>Taking output = 180 cum</i>					
			a) Labour					
			Mate	day	0.080	250.00	20.00	L-12
			Mazdoor	day	2.000	200.00	400.00	L-13
			b) Machinery					
			Dozer, 80 HP @ 30 cum per hour	hour	6.000	3286.00	19716.00	P&M-014
			c) Overhead charges @ 10 % on (a+b)				2013.60	
			d) Contractor's profit @ 10 % on (a+b+c)				2214.96	
			Cost for 180 cum = a+b+c+d				24364.56	
			Rate per cum = (a+b+c+d)/180				135.36	
						<i>say</i>	<i>135.35</i>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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 requirem					
		<i>Unit = cum</i>					
		<i>Taking output = 108 cum</i>					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		b) Machinery					
		Dozer, 80 HP @ 20 cum per hour	hour	6.000	3286.00	19716.00	P&M-014
		c) Overhead charges @ 10 % on (a+b)				2034.60	
		d) Contractor's profit @ 10 % on (a+b+c)				2238.06	
		Cost for 108 cum = a+b+c+d				24618.66	
		Rate per cum = (a+b+c+d)/108				227.95	
					say	227.95	
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 an					
		<i>Unit = cum</i>					
		<i>Taking Output = 180 cum</i>					
		a) Labour					
		Mate	day	0.220	250.00	55.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		Driller	day	2.000	250.00	500.00	L-06
		Blaster	day	0.250	250.00	62.50	L-03
		b) Machinery					
		Dozer, 80 HP @ 30 cum per hour	hour	6.000	3286.00	19716.00	P&M-014
		Air compressor, 250 cfm with 2 jack hammer	hour	6.000	469.00	2814.00	P&M-001
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	hour	11.250	554.00	6232.50	P&M-048
		c) Materials					
		Gelatin 80 per cent	kg	63.000	135.00	8505.00	M-104
		Electric Detonators @ 1 detonator for 2 gelatin sticks of 125 gms each	each	252.000	9.00	2268.00	M-094 /100
		Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	(210.00)	(18900.00)	M-089
		d) Overhead charges @ 10 % on (a+b+c)				2868.70	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3155.57	
		Cost for 180 cum = a+b+c+d+e				34711.27	
		Rate per cum = (a+b+c+d+e)/180				192.84	
					say	192.85	
		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 Tipper 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 emb					
		<i>Unit = cum</i>					
		<i>Taking output = 360 cum</i>					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	1428.00	8568.00	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.000	554.00	8864.00	P&M-048
		c) Overhead charges @ 10 % on (a+b)				1785.20	
		d) Contractor's profit @ 10 % on (a+b+c)				1963.72	
		Cost for 360 cum = a+b+c+d				21600.92	
		Rate per cum = (a+b+c+d)/360				60.00	
					<i>say</i>	<u>60.00</u>	
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					
		<i>Unit = cum</i>					
		<i>Taking output = 240 cum</i>					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Hydraulic Excavator 0.90 cum bucket capacity @ 36 cum per hour	hour	6.000	1428.00	8568.00	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	11.000	554.00	6094.00	P&M-048
		c) Overhead charges @ 10 % on (a+b)				1508.20	
		d) Contractor's profit @ 10 % on (a+b+c)				1659.02	
		Cost for 240 cum = a+b+c+d				18249.22	
		Rate per cum = (a+b+c+d)/240				76.04	
					<i>say</i>	<u>76.05</u>	
3.8	301	Excavation in Hard Rock (blasting prohibited)					
		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					
		A Mechanised					
		<i>Unit = cum</i>					
		<i>Taking output = 36 cum</i>					
		a) Labour					
		Mate	day	0.400	250.00	100.00	L-12
		Mazdoor for trimming slopes including manual loading in truck	day	10.000	200.00	2000.00	L-13
		b) Machinery					
		Hydraulic excavator with rock breaker attachment @ 6 cum per hour	hour	6.000	1428.00	8568.00	P&M-026
		Tipper 5.5 cum capacity, 1 trip per hour.	hour	6.500	554.00	3601.00	P&M-048
		Credit for excavated rock found suitable for use @ 50 per cent of excavated quantity	cum	18.000	(210.00)	(3780.00)	M-089
		c) Overhead charges @ 10 % on (a+b)				1048.90	
		d) Contractor's profit @ 10 % on (a+b+c)				1153.79	
		Cost for 36 cum = a+b+c+d				12691.69	
		Rate per cum = (a+b+c+d)/36				352.55	
					<i>say</i>	<u>352.55</u>	
		Note					
		1. The quality and availability of rock shall be checked before affording credit.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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					
		<i>Unit = cum</i>					
		<i>Taking output = 16 cum</i>					
		a) Labour					
		Mate	day	1.640	250.00	410.00	L-12
		Mazdoor including loading in truck	day	16.000	200.00	3200.00	L-13
		Chiseller	day	24.000	250.00	6000.00	L-05
		Blacksmith	day	1.000	300.00	300.00	L-02
		b) Machinery					
		Tipper 5.5 cum capacity, 1 trip per hour.	hour	2.900	554.00	1606.60	P&M-048
		Credit for excavated rock found suitable for use @ 50 per cent of excavated	cum	8.000	(210.00)	(1680.00)	M-089
		c) Overhead charges @ 10 % on (a+b)				983.66	
		d) Contractor's profit @ 10 % on (a+b+c)				1082.03	
		Cost for 16 cum = a+b+c+d				11902.29	
		Rate per cum = (a+b+c+d)/16				743.89	
					<i>say</i>	<i>743.90</i>	
		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					
		<i>Unit = cum</i>					
		<i>Taking output = 180 cum</i>					
		a) Labour					
		Mate	day	0.220	250.00	55.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		Driller	day	2.000	250.00	500.00	L-06
		Blaster	day	0.500	250.00	125.00	L-03
		b) Machinery					
		Dozer 80 HP @ 30 cum per hour	hour	6.000	3286.00	19716.00	P&M-014
		Air compressor, 250 cfm with 2 jack hammers	hour	6.000	469.00	2814.00	P&M-001
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	8.200	554.00	4542.80	P&M-048
		c) Materials					
		Gelatin 80 per cent	kg	63.000	135.00	8505.00	M-104
		Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	1008.000	9.00	9072.00	M-094 /100
		Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	(210.00)	(18900.00)	M-089
		Add 5 per cent of cost of a+b+c towards muffling arrangements to guard against any rock fly off during blasting				2638.19	
		d) Overhead charges @ 10 % on (a+b+c)				3650.20	
		e) Contractor's profit @ 10 % on (a+b+c+d)				4015.22	
		Cost for 180 cum = a+b+c+d+e				44167.41	
		Rate per cum = (a+b+c+d+e)/180				245.37	
					<i>say</i>	<i>245.35</i>	
		Note					
		1. Credit is considered for 50 per cent of quantity of blasted rock, if found suitable for construction..					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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					
		<i>Unit = cum</i>					
		<i>Taking output = 300 cum</i>					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Hydraulic excavator 0.90 cum bucket capacity @ 50 cum per hour	hour	6.000	1428.00	8568.00	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	13.640	554.00	7556.56	P&M-048
		c) Overhead charges @ 10 % on (a+b)				1654.46	
		d) Contractor's profit @ 10 % on (a+b+c)				1819.90	
		Cost for 300 cum = a+b+c+d				20018.92	
		Rate per cum = (a+b+c+d)/300				66.73	
					<i>say</i>	<u>66.75</u>	
3.11	301	Removal of Unserviceable Soil with Disposal upto 1000 metres					
		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.					
		<i>Unit = cum</i>					
		<i>Taking output = 360 cum</i>					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Excavator 0.90 cum bucket capacity @ 60 cum per hour	hour	6.000	1428.00	8568.00	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.360	554.00	9063.44	P&M-048
		c) Overhead charges @ 10 % on (a+b)				1805.14	
		d) Contractor's profit @ 10 % on (a+b+c)				1985.66	
		Cost for 360 cum = a+b+c+d				21842.24	
		Rate per cum = (a+b+c+d)/360				60.67	
					<i>say</i>	<u>60.65</u>	
		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					
		<i>Unit = sqm</i>					
		<i>Taking output = 400 sqm(120 cum considering 300mm average depth of excavation over the existing rock face)</i>					
		a) Labour					
		Mate	day	0.600	250.00	150.00	L-12
		Mazdoor	day	15.000	200.00	3000.00	L-13
		b) Machinery					
		Air compressor 250 cfm with 2 leads @ 20 cum per hour	hour	6.000	469.00	2814.00	P&M-001
		Dozer, 80 HP	hour	6.000	3286.00	19716.00	P&M-014
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Materials					
		Gelatin 80 per cent	kg	42.000	135.00	5670.00	M-104
		Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	672.000	9.00	6048.00	M-094 /100
		d) Overhead charges @ 10 % on (a+b+c)				4423.20	
		e) Contractor's profit @ 10 % on (a+b+c+d)				4865.52	
		Cost for 400 sqm = a+b+c+d+e				53520.72	
		Rate per sqm = (a+b+c+d+e)/400				133.80	
					say	<u>133.80</u>	
		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.
3.13	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, backfilling the exca					
		(i) Ordinary soil					
		Unit = cum					
		Taking output = 10 cum					
	A	Manual Means (Depth upto 3 m)					
		a) Labour					
		Mate	day	0.320	250.00	80.00	L-12
		Mazdoor	day	8.000	200.00	1600.00	L-13
		b) Overhead charges @ 10 % on (a)				168.00	
		c) Contractor's profit @ 10 % on (a+b)				184.80	
		Cost for 10 cum = a+b+c				2032.80	
		Rate per cum = (a+b+c)/10				203.28	
					say	<u>203.30</u>	
		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	250.00	80.00	L-12
		Mazdoor	day	8.000	200.00	1600.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1428.00	8568.00	P&M-026
		c) Overhead charges @ 10 % on (a+b)				1024.80	
		d) Contractor's profit @ 10 % on (a+b+c)				1127.28	
		Cost for 300 cum = a+b+c+d				12400.08	
		Rate per cum = (a+b+c+d)/300				41.33	
					say	<u>41.35</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..
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	250.00	100.00	L-12
		Mazdoor	day	10.000	200.00	2000.00	L-13
		b) Overhead charges @ 10 % on (a)				210.00	
		c) Contractor's profit @ 10 % on (a+b)				231.00	
		Cost for 10 cum = a+b+c				2541.00	
		Rate per cum = (a+b+c)/10				254.10	
					say	<u>254.10</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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					
			<i>Unit = cum</i>					
			<i>Taking output = 216 cum</i>					
		a)	Labour					
			Mate	day	0.240	250.00	60.00	L-12
			Mazdoor	day	6.000	200.00	1200.00	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1428.00	8568.00	P&M-026
		c)	Overhead charges @ 10 % on (a+b)				982.80	
		d)	Contractor's profit @ 10 % on (a+b+c)				1081.08	
			Cost for 216 cum = a+b+c+d				11891.88	
			Rate per cum = (a+b+c+d)/216				55.06	
						<i>say</i>	<u>55.05</u>	
		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					
			<i>Unit = cum</i>					
			<i>Taking output = 10 cum</i>					
		a)	Labour					
			i) Mate	day	0.530	250.00	132.50	L-12
			ii) Driller	day	0.840	250.00	210.00	L-06
			iii) Blaster	day	0.400	250.00	100.00	L-03
			iv) Mazdoor	day	12.000	200.00	2400.00	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 jack hammer @ 15 cum per hour	hour	0.667	469.00	312.67	P&M-001
		c)	Material					
			Blasting Material	kg	3.500	135.00	472.50	M-104
			Detonator electric	each	14.000	9.00	126.00	M-094 /100
		d)	Overhead charges @ 10 % on (a+b+c)				375.37	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				412.90	
			Cost for 10 cum = a+b+c+d+e				4541.94	
			Rate per cum = (a+b+c+d+e)/10				454.19	
						<i>say</i>	<u>454.20</u>	
		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)					
			<i>Unit = cum</i>					
			<i>Taking output = 10 cum</i>					
		A	Mechanical Means					
		a)	Labour					
			Mate	day	0.200	250.00	50.00	L-12
			Mazdoor	day	5.000	200.00	1000.00	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1 cum per hour	hour	10.000	469.00	4690.00	P&M-001
		c)	Overhead charges @ 10 % on (a+b)				574.00	
		d)	Contractor's profit @ 10 % on (a+b+c)				631.40	
			Cost for 10 cum = a+b+c+d				6945.40	
			Rate per cum = (a+b+c+d)/10				694.54	
						<i>say</i>	<u>694.55</u>	
		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.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		2. In case of rock, foundation beyond 3 m is not dug and hence not included.					
3.13	(v)	Marshy soil					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
	A	Manual means (upto 3 m depth)					
		a) Labour					
		Mate/Supervisor	day	0.400	250.00	100.00	L-12
		Mazdoor	day	10.000	200.00	2000.00	L-13
		b) Machinery					
		Tractor-trolley	hour	2.670	388.00	1035.96	P&M-053
		c) Material					
		Selected earth for refilling	cum	5.000	165.00	825.00	M-163
		d) Overhead charges @ 10 % on (a+b+c)				396.10	
		e) Contractor's profit @ 10 % on (a+b+c+d)				435.71	
		Cost for 10 cum = a+b+c+d+e				4792.76	
		Rate per cum = (a+b+c+d+e)/ 10				479.28	
						<i>say</i> 479.30	
	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	250.00	20.00	L-12
		ii) Mazdoor for dressing sides, bottom and backfilling	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.170	1428.00	242.76	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.450	554.00	249.30	P&M-048
		c) Material					
		Selected earth for refilling	cum	5.000	165.00	825.00	M-163
		d) Overhead charges @ 10 % on (a+b+c)				173.71	
		e) Contractor's profit @ 10 % on (a+b+c+d)				191.08	
		Cost for 10 cum = a+b+c+d+e				2101.84	
		Rate per cum = (a+b+c+d+e)/10				210.18	
						<i>say</i> 210.20	
	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.					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
		a) Labour					
		Mate	day	0.200	250.00	50.00	L-12
		Mazdoor including loading and unloading	day	5.000	200.00	1000.00	L-13
		b) Machinery					
		Tractor-trolley	hour	1.670	388.00	647.96	P&M-053
		d) Overhead charges @ 10 % on (a+b+c)				169.80	
		e) Contractor's profit @ 10 % on (a+b+c+d)				186.78	
		Cost for 100 sqm = a+b+c+d				2054.53	
		Rate per sqm = (a+b+c+d)/100				20.55	
						<i>say</i> 20.55	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	In case material is to be reused at site, transportation cost catered above for disposal shall be deleted.					
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.					
			<i>Unit = sqm</i>					
			<i>Taking output = 100 sqm</i>					
		a)	Labour					
			Mate	day	0.010	250.00	2.50	L-12
			Mazdoor	day	0.250	200.00	50.00	L-13
		b)	Machinery					
			Tractor with ripper attachment @ 60 cum per hour	hour	0.080	343.00	27.44	P&M-055
			Front end loader 1 cum bucket capacity @ 25 cum per hour	hour	0.200	1139.00	227.80	P&M-017
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.230	554.00	127.42	P&M-048
		c)	Overhead charges @ 10 % on (a+b)				43.52	
		d)	Contractor's profit @ 10 % on (a+b+c)				47.87	
			Cost for 100 sqm = a+b+c+d				526.54	
			Rate per sqm = (a+b+c+d)/100				5.27	
						say	<u>5.25</u>	
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.					
			<i>Unit = cum</i>					
			<i>Taking output = 100 cum</i>					
		a)	Labour					
			Mate	day	0.040	250.00	10.00	L-12
			Mazdoor	day	1.000	200.00	200.00	L-13
		b)	Machinery					
			Hydraulic Excavator 1 cum bucket capacity @ 60 cum per hour	hour	1.670	1428.00	2384.76	P&M-026
			Tipper 10 tonne capacity	tonne.km	160 x L	22.00	10560.00	Lead =3 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				1056.00	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3286.00	1643.00	P&M-014
			Motor grader for grading @ 100 cum per hour	hour	1.000	2379.00	2379.00	P&M-032
			Water tanker 6 KL capacity	hour	4.000	444.00	1776.00	P&M-060
			Three wheel 80-100 kN Statis Roller	hour	1.000	598.00	598.00	P&M-059
		c)	Material					
			Cost of water	KL	24.000	55.00	1320.00	M-189
			Compensation for earth taken from private land	cum	100.000	0.00	0.00	M-092
		d)	Overhead charges @ 10 % on (a+b+c)				2192.68	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				2411.94	
			Cost for 100 cum = a+b+c+d+e				26531.38	
			Rate per cum = (a+b+c+d+e)/100				265.31	
						say	<u>265.30</u>	
		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 clear					
3.17	305		Construction of Embankment with Material Deposited from Roadway Cutting					
			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.					
			<i>Unit = cum</i>					
			<i>Taking output = 100 cum</i>					
		a)	Labour					
			Mate	day	0.020	250.00	5.00	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	day	0.500	200.00	100.00	L-13
		b) Machinery					
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3286.00	1643.00	P&M-014
		Motor grader for grading @ 100 cum per hour	hour	1.000	2379.00	2379.00	P&M-032
		Water tanker 6 KL capacity	hour	4.000	444.00	1776.00	P&M-060
		Three wheel 80-100 kN Statis Roller	hour	1.000	598.00	598.00	P&M-059
		c) Material					
		Cost of water	KL	24.000	55.00	1320.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				782.10	
		e) Contractor's profit @ 10 % on (a+b+c+d)				860.31	
		Rate for 100 cum = a+b+c+d+e				9463.41	
		Rate per cum = (a+b+c+d+e)/100				94.63	
					say	<u>94.65</u>	
		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 lippers from r
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					
		<i>Unit = cum</i>					
		<i>Taking output = 100 cum</i>					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Machinery					
		Hydraulic excavator 1 cum bucket capacity @ 60 cum per hour	hour	1.670	1428.00	2384.76	P&M-026
		Tipper 10 tonne capacity	tonne.km	175xL	22.00	11550.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				1155.00	
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3286.00	1643.00	P&M-014
		Motor grader for grading @ 50 cum per hour	hour	2.000	2379.00	4758.00	P&M-032
		Water tanker with 6 km lead	hour	4.000	444.00	1776.00	P&M-060
		Three wheel 80-100 kN Statis Roller	hour	1.250	598.00	747.50	P&M-059
		c) Material					
		Cost of water	KL	24.000	55.00	1320.00	M-189
		Compensation for earth taken from private land	cum	100.000	0.00	0.00	M-092
		d) Overhead charges @ 10 % on (a+b+c)				2554.43	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2809.87	
		Cost for 100 cum = a+b+c+d+e				30908.55	
		Rate per cum = (a+b+c+d+e)/100				309.09	
					say	<u>309.10</u>	
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.					
		<i>Unit = cum</i>					
		<i>Taking output = 600 cum</i>					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		b) Machinery					
		Tractor with ripper attachment	hour	9.000	343.00	3087.00	P&M-055
		Motor grader for grading	hour	6.000	2379.00	14274.00	P&M-032

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Water tanker 6 KL capacity	hour	4.000	444.00	1776.00	P&M-060
		Three wheel 80-100 kN Statis Roller	hour	7.500	598.00	4485.00	P&M-059
		c) Material					
		Cost of water	KL	24.000	55.00	1320.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				2557.20	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2812.92	
		Cost for 600 cum = a+b+c+d+e				30942.12	
		Rate per cum = (a+b+c+d+e)/600				51.57	
					say	51.55	
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 g					
		Unit = cum					
		Taking output = 600 cum					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Tractor with ripper attachment	hour	6.000	343.00	2058.00	P&M-055
		Three wheel 80-100 kN Statis Roller	hour	7.500	598.00	4485.00	P&M-059
		Water tanker 6 KL capacity	hour	4.000	444.00	1776.00	P&M-060
		c) Material					
		Cost of water	KL	24.000	55.00	1320.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				1005.90	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1106.49	
		Cost for 600 cum = (a+b+c+d+e)				12171.39	
		Rate per sqm = (a+b+c+d+e)/600				20.29	
					say	20.30	
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	250.00	50.00	L-12
		Mazdoor	day	5.000	200.00	1000.00	L-13
		b) Machinery					
		Dozer 80 HP @ 100 cum per hour	hour	0.100	3286.00	328.60	P&M-014
		c) Overhead charges @ 10 % on (a+b)				137.86	
		d) Contractor's profit @ 10 % on (a+b+c)				151.65	
		Cost for 10 cum = (a+b+c+d)				1668.11	
		Rate per cum = (a+b+c+d)/10				166.81	
					say	166.80	
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					
		Unit = cum					
		Taking output = 300 cum					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Dozer, 80 HP	hour	6.000	3286.00	19716.00	P&M-014
		c) Overhead charges @ 10 % on (a+b)				2013.60	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) Contractor's profit @ 10 % on (a+b+c)				2214.96	
		Cost for 300 cum = (a+b+c+d)				24364.56	
		Rate per cum = (a+b+c+d)/300				81.22	
					<i>say</i>	81.20	
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.					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Mazdoor for preparation of ground and fetching of sods	day	3.000	200.00	600.00	L-13
		b) Machinery					
		Water tanker including watering for 3 months	hour	2.000	444.00	888.00	P&M-060
		Tractor-trolley	hour	1.000	388.00	388.00	P&M-053
		c) Material					
		Farm yard manure @ 0.18 cum per 100 sqm at site of work	cum	0.180	110.00	19.80	M-167
		Cost of water	KL	12.000	55.00	660.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				258.58	
		e) Contractor's profit @ 10 % on (a+b+c+d)				284.44	
		Cost for 100 sqm = a+b+c+d+e				3128.82	
		Rate per 100 sqm = (a+b+c+d+e)/100				31.29	
					<i>say</i>	31.30	
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 240 sqm</i>					
		a) Labour					
		Mate	day	0.400	250.00	100.00	L-12
		Mazdoor	day	10.000	200.00	2000.00	L-13
		b) Machinery					
		Water tanker 6 KL capacity including watering for 3 months	hour	14.000	444.00	6216.00	P&M-060
		Tractor-trolley	hour	2.400	388.00	931.20	P&M-053
		c) Material					
		Seeds	kg	3.600	275.00	990.00	M-162
		Sludge/Farm yard manure @ 0.18 cum per 100 sqm	cum	0.430	110.00	47.30	M-167
		Bitumen Emulsion	litre	55.200	35.42	1955.02	M-077
		Jute netting, open weave, 2.5 cm square opening	sqm	264.000	12.00	3168.00	M-121
		Cost of water for 3 months	KL	84.000	55.00	4620.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				2002.75	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2203.03	
		Cost for 240 sqm = a+b+c+d+e				24233.30	
		Rate per sqm = (a+b+c+d+e)/240				100.97	
					<i>say</i>	100.95	
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 (ave					
		<i>Unit = metre</i>					
		<i>Taking output = 10 metres</i>					
		A Mechanical means					
		a) Labour					
		Mate	day	0.010	250.00	2.50	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor for dressing of bed and side of drain	day	0.250	200.00	50.00	L-13
		b) Machinery					
		Hydraulic Excavator 0.3 cum bucket capacity @ 30 metres per hour	hour	0.330	1428.00	471.24	P&M-026
		c) Overhead charges @ 10 % on (a+b)				52.37	
		d) Contractor's profit @ 10 % on (a+b+c)				57.61	
		Cost for 10 metres = a+b+c+d				633.73	
		Rate per metre = (a+b+c+d)/10				63.37	
					say	<u>63.35</u>	
3.24	B	Manual Means					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Overhead charges @ 10 % on (a)				42.00	
		c) Contractor's profit @ 10 % on (a+b)				46.20	
		Cost for 10 metres = a+b+c				508.20	
		Rate per metre = (a+b+c)/10				50.82	
					say	<u>51.80</u>	
		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 embankmen					
		Unit = metre					
		Taking output = 10 metres					
	A	Mechanical Means					
		a) Labour					
		Mate	day	0.020	250.00	5.00	L-12
		Mazdoor for dressing of bed and side of drain	day	0.500	200.00	100.00	L-13
		b) Machinery					
		Hydraulic Excavator 0.3 cum bucket capacity @ 15 metres per hour	hour	0.670	1428.00	956.76	P&M-026
		c) Overhead charges @ 10 % on (a+b)				106.18	
		d) Contractor's profit @ 10 % on (a+b+c)				116.79	
		Cost for 10 metres = a+b+c+d				1284.73	
		Rate per metre = (a+b+c+d)/10				128.47	
					say	<u>128.45</u>	
3.25	B	Manual Means					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		b) Overhead charges @ 10 % on (a)				63.00	
		c) Contractor's profit @ 10 % on (a+b)				69.30	
		Cost for 10 metres = a+b+c				762.30	
		Rate per metre = (a+b+c)/10				76.23	
					say	<u>76.25</u>	
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 bed					
		Unit = metre					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.	
		<i>Taking output = 10 metres</i>						
		a) Labour						
		Mate	day	0.04	250.00	10.00	L-12	
		Mazdoor for excavation and back filling	day	2.000	200.00	400.00	L-13	
		c) Material						
		Perforated pipe of cement concrete, internal dia 100 mm	metre	10.000	78.00	780.00	M-135	
		Crushed stone as per table 300-3	cum	2.400	957.00	2296.80	M-012	
		d) Overhead charges @ 10 % on (a+b+c)				348.68		
		e) Contractor's profit @ 10 % on (a+b+c+d)				383.55		
		Cost for 10 metres = a+b+c+d+e				4219.03		
		Rate per metre = (a+b+c+d+e)/10				421.90		
						<i>say</i>	<u>421.90</u>	
		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.						
		<i>Unit = metre</i>						
		<i>Taking output = 10 metres</i>						
		a) Labour						
		Mate	day	0.020	250.00	5.00	L-12	
		Mazdoor for excavation and back filling with aggregates	day	1.500	200.00	300.00	L-13	
		b) Material						
		Crushed stone as per table 300-3	cum	1.350	957.00	1291.95	M-012	
		c) Overhead charges @ 10 % on (a+b)				159.70		
		d) Contractor's profit @ 10 % on (a+b+c)				175.66		
		Cost for 10 metres = a+b+c+d				1932.31		
		Rate per metre = (a+b+c+d)/10				193.23		
						<i>say</i>	<u>193.25</u>	
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.						
		<i>Unit = Running metre</i>						
		<i>Taking output = one metre</i>						
		a) Earthwork in soil	cum	1.500	41.30	61.95	Item No. 3.13	
		b) RCC work M-20	cum	0.495	5848.60	2895.06	Item 12.8 (C) RCC	
		Rate per metre = (a+b)				2957.01		
		Rates for these items may be taken from chapters on earth work and substructures respectively.				<i>say</i>	<u>2956.75</u>	
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						
		<i>Unit = sqm</i>						
		<i>Taking output = 3500sqm</i>						
		a) Labour						
		Mate	day	0.280	250.00	70.00	L-12	
		Mazdoor	day	6.000	200.00	1200.00	L-13	
		Mazdoor skilled	day	1.000	300.00	300.00	L-15	
		b) Machinery						
		Smooth 3 wheeled steel roller 8-10 tonnes	hour	3.000	458.00	1374.00	P&M-044	
		Water tanker 6 KL, one trip per hour	hour	3.000	444.00	1332.00	P&M-060	
		c) Material						
		Cost of water	KL	18.000	55.00	990.00	M-189	
		d) Overhead charges @ 10 % on (a+b+c)				526.60		
		e) Contractor's profit @ 10 % on (a+b+c+d)				579.26		
		Cost for 3500 sqm = a+b+c+d+e				6371.86		
		Rate per sqm = (a+b+c+d+e)/3500				1.82		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
						say	<u>1.80</u>	
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 vibrat					
			<i>Unit = cum</i>					
			<i>Taking output = 100 cum</i>					
			a) Labour					
			Mate	day	0.040	250.00	10.00	L-12
			Mazdoor	day	1.500	200.00	300.00	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3286.00	1643.00	P&M-014
			Three wheel 80-100 kN Statis Roller	hour	1.000	598.00	598.00	P&M-059
			Water tanker 6 KL, one trip per hour	hour	2.000	444.00	888.00	P&M-060
			c) Material					
			Cost of water	KL	12.000	55.00	660.00	M-189
			d) Overhead charges @ 10 % on (a+b+c)				409.90	
			e) Contractor's profit @ 10 % on (a+b+c+d)				450.89	
			Cost for 100 cum = a+b+c+d+e				4959.79	
			Rate per cum = (a+b+c+d+e)/100				49.60	
						say	<u>49.60</u>	
		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	(i)	Excavation in Hill Area in Soil by Mechanical Means (Dipositing of excavated earth with all lifts and lead upto 1000 m					
			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.					
			<i>Unit = cum</i>					
			<i>Taking output = 260 cum</i>					
			a) Labour					
			Mate	day	0.240	250.00	60.00	L-12
			Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	200.00	1200.00	L-13
			b) Machinery					
			Dozer D-50 @ 43.28 cum per hour	hour	6.000	2393.00	14358.00	P&M-014
			Front end loader	hour	6.000	1139.00	6834.00	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	12.000	554.00	6648.00	P&M-048
			c) Overhead charges @ 10 % on (a+b)				2910.00	
			d) Contractor's profit @ 10 % on (a+b+c)				3201.00	
			Cost for 260 cum = a+b+c+d				35211.00	
			Rate per cum = (a+b+c+d)/260				135.43	
						say	<u>135.45</u>	
		(ii)	Depositing of excavated earth on the barren valley side.					
			Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth on the Barren Valley side.					
			<i>Unit = cum</i>					
			<i>Taking output = 260 cum</i>					
			a) Labour					
			Mate	day	0.240	250.00	60.00	L-12
			Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	200.00	1200.00	L-13
			b) Machinery					
			Dozer D-50 @ 43.28 cum per hour	hour	6.000	2393.00	14358.00	P&M-014
			c) Overhead charges @ 10 % on (a+b)				1561.80	
			d) Contractor's profit @ 10 % on (a+b+c)				1717.98	
			Cost for 260 cum = a+b+c+d				18897.78	
			Rate per cum = (a+b+c+d)/260				72.68	
						say	<u>72.70</u>	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.33	301	(i)	Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting (Disposal of cut material with all lift and lead upto 1000 m)					
			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.					
			<i>Unit = cum</i>					
			<i>Taking output = 170 cum</i>					
			a) Labour					
			Mate	day	0.320	250.00	80.00	L-12
			Mazdoor	day	8.000	200.00	1600.00	L-13
			b) Machinery					
			Dozer D-50 @ 28.32 cum per hour	hour	6.000	2393.00	14358.00	P&M-014
			Front end loader	hour	7.000	1139.00	7973.00	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	554.00	3878.00	P&M-048
			c) Overhead charges @ 10 % on (a+b)				2788.90	
			d) Contractor's profit @ 10 % on (a+b+c)				3067.79	
			Cost for 170 cum = a+b+c+d				33745.69	
			Rate per cum = (a+b+c+d)/170				198.50	
						<i>say</i>	<u>198.50</u>	
		(ii)	Disposal of excavated earth on the barren valley side.					
			Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of excavated earth on the barren valley side.					
			<i>Unit = cum</i>					
			<i>Taking output = 170 cum</i>					
			a) Labour					
			Mate	day	0.320	250.00	80.00	L-12
			Mazdoor	day	8.000	200.00	1600.00	L-13
			b) Machinery					
			Dozer D-50 @ 28.32 cum per hour	hour	6.000	2393.00	14358.00	P&M-014
			c) Overhead charges @ 10 % on (a+b)				1603.80	
			d) Contractor's profit @ 10 % on (a+b+c)				1764.18	
			Cost for 170 cum = a+b+c+d				19405.98	
			Rate per cum = (a+b+c+d)/170				114.15	
						<i>say</i>	<u>114.15</u>	
3.34	301	(i)	Excavation in Hilly Areas in Hard Rock Requiring Blasting (Disposal of cut material with all lift and lead upto 1000 m).					
			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.					
			<i>Unit = cum</i>					
			<i>Taking output = 170 cum</i>					
			a) Labour					
			Mate	day	0.490	250.00	122.50	L-12
			Mazdoor	day	10.000	200.00	2000.00	L-13
			Driller	day	2.000	250.00	500.00	L-06
			Blaster	day	0.250	250.00	62.50	L-03
			b) Machinery					
			Dozer D-50 @ 28.32 cum per hour	hour	6.000	2393.00	14358.00	P&M-014
			Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	469.00	2345.00	P&M-001
			Front end loader	hour	7.000	1139.00	7973.00	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	554.00	3878.00	P&M-048

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Materials					
		Gelatine 80 per cent	kg	35.000	135.00	4725.00	M-104
		Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	140.000	9.00	1260.00	M-094 /100
		d) Overhead charges @ 10 % on (a+b+c)				3722.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				4094.64	
		Cost for 170 cum = a+b+c+d+e				45041.04	
		Rate per cum = (a+b+c+d+e)/170				264.95	
					say	<u>264.95</u>	
		(ii) Disposal of excavated earth on the barren valley side.					
		Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of excavated earth on the barren valley side.					
		Unit = cum					
		Taking output = 170 cum					
		a) Labour					
		Mate	day	0.490	250.00	122.50	L-12
		Mazdoor	day	10.000	200.00	2000.00	L-13
		Driller	day	2.000	250.00	500.00	L-06
		Blaster	day	0.250	250.00	62.50	L-03
		b) Machinery					
		Dozer D-50 @ 28.32 cum per hour	hour	6.000	2393.00	14358.00	P&M-014
		Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	469.00	2345.00	P&M-001
		c) Materials					
		Gelatine 80 per cent	kg	35.000	135.00	4725.00	M-104
		Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	140.000	9.00	1260.00	M-094 /100
		d) Overhead charges @ 10 % on (a+b+c)				2537.30	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2791.03	
		Cost for 170 cum = a+b+c+d+e				30701.33	
		Rate per cum = (a+b+c+d+e)/170				180.60	
					say	<u>181.60</u>	
3.35	1600 & 300	(i) Excavation in Hilly Areas in Soil by Manual Means					
		(A) Excavation in soil in Hilly Area by Manual Means including cutting and trimming of side slopes and disposing of excavated earth with a lift upto 1.5 m and a lead upto 20 m as per drawing and Technical Specification Clause 1603.1					
		Unit = Cum					
		Taking output = 120 cum.					
		a) Labour					
		Mate	day	2.400	250.00	600.00	L-12
		Mazdoor (Unskilled)	day	60.000	200.00	12000.00	L-13
		b) Overhead charges @ 10 % on (a)				1260.00	
		c) Contractor's profit @ 10 % on (a+b)				1386.00	
		Cost for 120 cum = a+b+c				15246.00	
		Rate per cum = (a+b+c)/120				127.05	
					say	<u>127.05</u>	
		(B) Deduct for quantum of earthwork of all types disposal directly by throwing into the valley without involving any lead and lift.					
		Ordinary and Hard Soil/Hard Shale, Soil containing shingle or small size boulders.					
		Unit = Cum					
		Taking output = 1 cum.					
		a) Labour					
		Mazdoor (Unskilled)	day	0.199	200.00	39.80	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Overhead charges @ 10 % on (a)				3.98	
		c) Contractor's profit @ 10 % on (a+b)				4.38	
		Cost for 1 cum = a+b+c				48.16	
		Rate per cum = (a+b+c)/1				48.16	
					say	<u>48.15</u>	
	(ii)	Excavation in Hilly Area in Ordinary Rock by Manual Means					
	(A)	Excavation in Ordinary Rock using Manual Means including loading in a truck and carrying of excavated material to embankment site with a lift upto 1.5 m and lead upto 20 m as per Clause 1603.2.					
		<i>Unit = Cum</i>					
		<i>Taking output = 120 cum.</i>					
		a) Labour					
		Mate	day	5.280	250.00	1320.00	L-12
		Mazdoor (Unskilled)	day	132.000	200.00	26400.00	L-13
		b) Overhead charges @ 10 % on (a)				2772.00	
		c) Contractor's profit @ 10 % on (a+b)				3049.20	
		Cost for 120 cum = a+b+c				33541.20	
		Rate per cum = (a+b+c)/120				279.51	
					say	<u>279.50</u>	
	(B)	Deduct for quantum of earthwork of all types disposal directly by throwing into the valley without involving any lead and lift.					
		Ordinary and Hard Rock					
		<i>Unit = Cum</i>					
		<i>Taking output = 1 cum.</i>					
		a) Labour					
		Mazdoor (Unskilled)	day	0.319	200.00	63.80	L-13
		b) Overhead charges @ 10 % on (a)				6.38	
		c) Contractor's profit @ 10 % on (a+b)				7.02	
		Cost for 1 cum = a+b+c				77.20	
		Rate per cum = (a+b+c)/1				77.20	
					say	<u>77.20</u>	

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 r					
			<i>Unit = cum</i>					
			<i>Taking output = 225 cum (450 tonne)</i>					
		a)	Labour					
			Male	day	0.400	250.00	100.00	L-12
			Mazdoor skilled	day	2.000	300.00	600.00	L-15
			Mazdoor	day	8.000	200.00	1600.00	L-13
		b)	Machinery					
			Wet mix plant @ 75 tonne capacity per hour	hour	6.000	1650.00	9900.00	P&M-093
			Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
			Water tanker 6 KL capacity 5 km lead with one trip per hour	hour	4.500	444.00	1998.00	P&M-060
			Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
			Tipper 10 tonne	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover loading and unloading				0.00	
			Motor Grader 110 HP	hour	6.000	2379.00	14274.00	P&M-032
			Vibratory roller 8-10 t	hour	6.000	598.00	3588.00	P&M-059
		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	700.00	100800.00	M-013
			9.5 mm to 2.36 mm @ 20 per cent (graded)	cum	57.000	580.00	33060.00	M-017
			2.36 mm below @ 30 per cent	cum	86.400	440.00	38016.00	M-020
			Cost of water	KL	27.000	55.00	1485.00	M-189
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	100.800	550.00	55440.00	M-015
			9.5 mm to 2.36 mm @ 25 per cent (graded)	cum	72.000	580.00	41760.00	M-017
			2.36 mm below @ 40 per cent	cum	115.200	440.00	50688.00	M-020
			Cost of water	KL	27.000	55.00	1485.00	M-189
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	100.800	600.00	60480.00	M-016
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	36.000	500.00	18000.00	M-018
			2.36 mm below @ 52.5 per cent	cum	151.200	440.00	66528.00	M-020
			Cost of water	KL	27.000	55.00	1485.00	M-189
4.1A		(i)	Rate per cum for grading-I Material					
		d)	Overhead charges @ 10 % on (a+b+c)				21654.50	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				23819.95	
			Cost for 225 cum = a+b+c+d+e				262019.45	
			Rate per cum = (a+b+c+d+e)/225				1164.53	
							<i>say</i>	<i>1164.55</i>
4.1A		(ii)	Rate per cum for grading-II Material					
		d)	Overhead charges @ 10 % on (a+b+c)				19255.70	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				21181.27	
			Cost for 225 cum = a+b+c+d+e				232993.97	
			Rate per cum = (a+b+c+d+e)/225				1035.53	
							<i>say</i>	<i>1035.55</i>
4.1A		(iii)	Rate per cum for grading-III Material					
		d)	Overhead charges @ 10 % on (a+b+c)				18967.70	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				20864.47	
			Cost for 225 cum = a+b+c+d+e				229509.17	
			Rate per cum = (a+b+c+d+e)/225				1020.04	
							<i>say</i>	<i>1020.05</i>
		Note	Any one of the grading for material may be adopted as per design					

Sr No	Ref. to MORTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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 densi					
			<i>Unit = cum</i>					
			<i>Taking output = 300 cum</i>					
			a) Labour					
			Mate	day	0.480	250.00	120.00	L-12
			Mazdoor skilled	day	2.000	300.00	600.00	L-15
			Mazdoor unskilled	day	10.000	200.00	2000.00	L-13
			b) Machinery					
			Motor Grader 110 HP @ 50 cum	hour	6.000	2379.00	14274.00	P&M-032
			Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
			Tractor - Rotavator	hour	12.000	333.00	3996.00	P&M-054
			Water tanker 6 KL capacity	hour	3.000	444.00	1332.00	P&M-060
			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	700.00	134400.00	M-013
			9.5 mm to 2.36 mm @ 20 per cent	cum	76.000	580.00	44080.00	M-017
			2.36 mm below @ 30 per cent	cum	115.200	440.00	50688.00	M-020
			Cost of water	KL	18.000	55.00	990.00	M-189
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	134.400	550.00	73920.00	M-015
			9.5 mm to 2.36 mm @ 25 per cent	cum	96.000	580.00	55680.00	M-017
			2.36 mm below @ 40 per cent	cum	153.600	440.00	67584.00	M-020
			Cost of water	KL	18.000	55.00	990.00	M-189
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	134.400	600.00	80640.00	M-016
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	48.000	500.00	24000.00	M-018
			2.36 mm below @ 52.5 per cent	cum	201.600	440.00	88704.00	M-020
			Cost of water	KL	18.000	55.00	990.00	M-189
4.1B		(i)	Rate per cum for grading-I Material					
			d) Overhead charges @ 10 % on (a+b+c)				25606.80	
			e) Contractor's profit @ 10 % on (a+b+c+d)				28167.48	
			Cost for 300 cum = a+b+c+d+e				309842.28	
			Rate per cum = (a+b+c+d+e)/300				1032.81	
						say	<u>1032.80</u>	
4.1B		(ii)	Rate per cum for grading-II Material					
			d) Overhead charges @ 10 % on (a+b+c)				22408.40	
			e) Contractor's profit @ 10 % on (a+b+c+d)				24649.24	
			Cost for 300 cum = a+b+c+d+e				271141.64	
			Rate per cum = (a+b+c+d+e)/300				903.81	
						say	<u>903.80</u>	
4.1B		(iii)	Rate per cum for grading-III Material					
			d) Overhead charges @ 10 % on (a+b+c)				22024.40	
			e) Contractor's profit @ 10 % on (a+b+c+d)				24226.84	
			Cost for 300 cum = a+b+c+d+e				266495.24	
			Rate per cum = (a+b+c+d+e)/300				888.32	
						say	<u>888.30</u>	
		Note	Any one of the grading for material may be adopted as per design					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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 rolavator at OMC, and compacting with vibratory roller to achieve the desired dens					
		<i>Unit = cum</i>					
		<i>Taking output = 300 cum</i>					
		a) Labour					
		Mate	day	0.400	250.00	100.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	8.000	200.00	1600.00	L-13
		b) Machinery					
		Mortar Grader 110 HP @ 50 cum per hour	hour	6.000	2379.00	14274.00	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Water tanker 6 KL capacity	hour	3.000	444.00	1332.00	P&M-060
		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	750.00	100800.00	M-029
		26.5 mm to 4.75 mm @ 45 per cent	cum	172.800	600.00	103680.00	M-026
		2.36 mm below @ 20 per cent. (Coarse Sand)	cum	76.800	460.00	35328.00	M-022
		Cost of water	KL	18.000	55.00	990.00	M-189
		OR					
		For Grading-II Material					
		26.5 mm to 4.75 mm @ 75 per cent	cum	288.000	600.00	172800.00	M-026
		2.36 mm below @ 25 per cent	cum	96.000	460.00	44160.00	M-022
		Cost of water	KL	18.000	55.00	990.00	M-189
		OR					
		For Grading-III Material					
		9.5 mm to 4.75 mm @ 66 per cent	cum	255.000	550.00	140250.00	M-025
		2.36 mm below @ 34 per cent	cum	129.000	460.00	59340.00	M-022
		Cost of water	KL	18.000	55.00	990.00	M-189
4.2	(i)	Rate per cum for grading-I Material					
		d) Overhead charges @ 10 % on (a+b+c)				26229.20	
		e) Contractor's profit @ 10 % on (a+b+c+d)				28852.12	
		Cost for 300 cum = a+b+c+d+e				317373.32	
		Rate per cum = (a+b+c+d+e)/300				1057.91	
					say	<u>1057.90</u>	
4.2	(ii)	Rate per cum for grading-II Material					
		d) Overhead charges @ 10 % on (a+b+c)				23944.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				26338.84	
		Cost for 300 cum = a+b+c+d+e				289727.24	
		Rate per cum = (a+b+c+d+e)/300				965.76	
					say	<u>965.75</u>	
4.2	(iii)	Rate per cum for grading-III Material					
		d) Overhead charges @ 10 % on (a+b+c)				22207.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				24428.14	
		Cost for 300 cum = a+b+c+d+e				268709.54	
		Rate per cum = (a+b+c+d+e)/300				895.70	
					say	<u>895.70</u>	
	Note	Any one of the grading for material may be adopted as per design					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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 w					
		<i>Unit = cum</i>					
		<i>Taking output = 300 cum (525 tonne)</i>					
	A	By Mechanical Means					
		a) Labour					
		Mate	day	0.360	250.00	90.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	300.00	300.00	L-15
		Mazdoor for spraying lime	day	8.000	200.00	1600.00	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	343.00	4116.00	P&M-055
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2379.00	14274.00	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.00x0.65	598.00	2332.20	P&M-059
		Water tanker 6 KL capacity	hour	12.000	444.00	5328.00	P&M-060
		c) Material					
		Lime at site	tonne	15.750	10500.00	165375.00	M-188
		Cost of water	KL	72.000	55.00	3960.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				19737.52	
		e) Contractor's profit @ 10 % on (a+b+c+d)				21711.27	
		Cost for 300 cum= a+b+c+d+e				238823.99	
		Rate per cum = (a+b+c+d+e)/300				796.08	
					<i>say</i>	796.10	
		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					
		<i>Unit = cum</i>					
		<i>Taking output = 150 cum (263 tonnes)</i>					
		a) Labour					
		Mate	day	1.440	250.00	360.00	L-12
		Mazdoor skilled	day	1.000	300.00	300.00	L-15
		Mazdoor	day	35.000	200.00	7000.00	L-13
		b) Machinery					
		Three wheel 80-100 kN Statis Roller	hour	2.500	598.00	1495.00	P&M-059
		Water tanker 6 KL capacity	hour	6.000	444.00	2664.00	P&M-060
		c) Material					
		Lime at site	tonne	8.000	10500.00	84000.00	M-188
		Cost of water	KL	36.000	55.00	1980.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				9779.90	
		e) Contractor's profit @ 10 % on (a+b+c+d)				10757.89	
		Cost for 150 cum= a+b+c+d+e				118336.79	
		Rate per cum = (a+b+c+d+e)/150				788.91	
					<i>say</i>	788.90	
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 rol					
		<i>Unit = cum</i>					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Taking output = 300 cum (525 tonnes)</i>					
		a) Labour					
		Mate	day	0.480	250.00	120.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	10.000	200.00	2000.00	L-13
		b) Machinery					
		Excavator 0.90 cum bucket capacity	hour	6.000	1428.00	8568.00	P&M-026
		Tipper for carriage of soil	tonne.km	525 x L	22.00	34650.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				3465.00	
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2379.00	14274.00	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	333.00	3996.00	P&M-054
		Water tanker 6 KL capacity	hour	12.000	444.00	5328.00	P&M-060
		c) Material					
		Lime at site	tonne	15.750	10500.00	165375.00	M-188
		Cost of water	KL	72.000	55.00	3960.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				24592.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				27051.64	
		Cost for 300 cum = a+b+c+d+e				297568.04	
		Rate per cum= (a+b+c+d+e)/300				991.89	
					<i>say</i>	<i>991.90</i>	
4.5	403	Cement Treated Soil Sub Base/ Base					
		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 d					
		<i>Unit = cum</i>					
		<i>Taking output = 300 cum (525 tonnes)</i>					
		For 4 per cent quantity of cement by weight of soil					
		a) Labour					
		Mate	day	0.480	250.00	120.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	10.000	200.00	2000.00	L-13
		b) Machinery					
		Excavator 0.90 cum bucket capacity	hour	6.000	1428.00	8568.00	P&M-026
		Tipper for carriage of soil	tonne.km	525 x L	22.00	34650.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				3465.00	
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2379.00	14274.00	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	333.00	3996.00	P&M-054
		Water tanker 6 KL capacity	hour	12.000	444.00	5328.00	P&M-060
		c) Material					
		Cement at site (@ 4 per cent of 525 tonne)	tonne	21.000	7989.00	167769.00	M-081
		Cost of water	KL	72.000	55.00	3960.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				24831.80	
		e) Contractor's profit @ 10 % on (a+b+c+d)				27314.98	
		Cost for 300 cum = a+b+c+d+e				300464.78	
		Rate per cum= (a+b+c+d+e)/300				1001.55	
					<i>say</i>	<i>1001.55</i>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.7	404.3.1	Making 50 mm x 50 mm Furrows					
		Making 50 mm x 50 mm furrows, 25mm/ 50mm deep, 450 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					
		<i>Unit = sqm</i>					
		<i>Taking output = 30 m x 7 m = 210 sqm</i>					
	(i)	50mm deep furrow cutting					
		a) Labour					
		Male	day	0.160	250.00	40.00	L-12
		Mazdoor	day	4.000	200.00	800.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.400	388.00	155.20	P&M-053
		c) Overhead charges @ 10 % on (a+b)				99.52	
		d) Contractor's profit @ 10 % on (a+b+c)				109.47	
		Cost for 210 sqm= a+b+c+d				1204.19	
		Rate per sqm =(a+b+c+d)/210				5.73	
						<i>say</i>	<u>5.75</u>
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					
		<i>Unit = cum</i>					
		<i>Taking output = 600 cum</i>					
		a) Labour					
		Male	day	0.920	250.00	230.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	21.000	200.00	4200.00	L-13
		b) Machinery					
		Motor Grader 110 HP	hour	6.000	2379.00	14274.00	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Water tanker 6 KL capacity	hour	18.000	444.00	7992.00	P&M-060
		c) Material					
		Screening type 'B' or coarse sand	cum	720.000	490.00	352800.00	M-004
		Cost of water	KL	108.000	55.00	5940.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				38962.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				42858.64	
		Cost for 600 cum = a+b+c+d+e				471445.04	
		Rate per cum = (a+b+c+d+e)/600				785.74	
						<i>say</i>	<u>785.75</u>
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 grad					
	A	By Manual Means					
		<i>Unit = cum</i>					
		<i>Taking output = 360 cum</i>					
		a) Labour					
		Male	day	10.080	250.00	2520.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	250.000	200.00	50000.00	L-13
		b) Machinery					
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		or					
		Smooth 3 wheeled steel roller @ 30cum/hour	hour	12.000			
		Water tanker 6 KL capacity	hour	24.000	444.00	10656.00	P&M-060

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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	682.00	297079.20	M-039
		Stone Screening					
		Type A 13.2 mm for grading-I @ 0.27 cum per 10 sqm	cum	97.200	1067.00	103712.40	M-052
		OR					
		Crushable type such as Moorum or Gravel for grading-I @ 0.30 cum per 10 sqm	cum	108.000	165.00	17820.00	M-007
		Binding material					
		Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	165.00	4752.00	M-007
		Cost of water	KL	144.000	55.00	7920.00	M-189
4.9A (i)	(a)	Using Scrining Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 10 % on (a+b+c)				39018.32	
		e) Contractor's profit @ 10 % on (a+b+c+d)				42920.15	
		Cost for 360 cum = a+b+c+d+e				472121.67	
		Rate per cum = (a+b+c+d+e)/360				1311.45	
						say <u>1311.45</u>	
		OR					
4.9A (i)	(b)	Using Scrining Type-A (13.2mm agg.)					
		d) Overhead charges @ 10 % on (a+b+c)				48082.76	
		e) Contractor's profit @ 10 % on (a+b+c+d)				52891.04	
		Cost for 360 cum = a+b+c+d+e				581801.40	
		Rate per cum = (a+b+c+d+e)/360				1616.11	
						say <u>1616.10</u>	
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	704.00	306662.40	M-038
		Stone Screening					
		Type A 13.2 mm for grading-II@ 0.12 cum per 10 sqm	cum	57.600	1067.00	61459.20	M-052
		OR					
		Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	165.00	17422.35	M-007
		OR					
		Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1650.00	142560.00	M-051
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	165.00	4752.00	M-007
		Cost of water	KL	144.000	55.00	7920.00	M-189
4.9A (ii)	(a)	Using Scrining Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 10 % on (a+b+c)				39936.88	
		e) Contractor's profit @ 10 % on (a+b+c+d)				43930.56	
		Cost for 360 cum = a+b+c+d+e				483236.19	
		Rate per cum = (a+b+c+d+e)/360				1342.32	
						say <u>1342.30</u>	
		OR					
4.9A (ii)	(b)	Using Scrining Type-A (13.2mm agg.)					
		d) Overhead charges @ 10 % on (a+b+c)				44815.76	
		e) Contractor's profit @ 10 % on (a+b+c+d)				49297.34	
		Cost for 360 cum = a+b+c+d+e				542270.70	
		Rate per cum = (a+b+c+d+e)/360				1506.31	
						say <u>1506.30</u>	
4.9A (ii)	(c)	Using Scrining Type-B (11.2mm agg.)					
		d) Overhead charges @ 10 % on (a+b+c)				52925.84	
		e) Contractor's profit @ 10 % on (a+b+c+d)				58218.42	
		Cost for 360 cum = a+b+c+d+e				640402.66	
		Rate per cum = (a+b+c+d+e)/360				1778.90	
						say <u>1778.90</u>	
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	726.00	316245.60	M-036
		Stone Screening					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1650.00	142560.00	M-051
		OR					
		Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	165.00	17422.35	M-007
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	165.00	4752.00	M-007
		Cost of water	KL	144.000	55.00	7920.00	M-189
4.9A (iii)		(a) Using Scrining Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 10 % on (a+b+c)				40895.20	
		e) Contractor's profit @ 10 % on (a+b+c+d)				44984.71	
		Cost for 360 cum = a+b+c+d+e				494831.86	
		Rate per cum = (a+b+c+d+e)/360				1374.53	
					say	1374.55	
		OR					
4.9A (iii)		(b) Using Scrining Type-B (11.2mm agg.)					
		d) Overhead charges @ 10 % on (a+b+c)				53884.16	
		e) Contractor's profit @ 10 % on (a+b+c+d)				59272.58	
		Cost for 360 cum = a+b+c+d+e				651998.34	
		Rate per cum = (a+b+c+d+e)/360				1811.11	
					say	1811.10	
		(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					
		Male	day	0.680	250.00	170.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	15.000	200.00	3000.00	L-13
		b) Machinery					
		Motor grader 110 HP @ 50cum/hr. for spreading	hour	7.200	2379.00	17128.80	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		or					
		Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
		Water tanker 6 KL capacity	hour	24.000	444.00	10656.00	P&M-060
		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	682.00	297079.20	M-039
		Stone Screening					
		Type A 13.2 mm for grading-I @ 0.27 cum per 10 sqm	cum	97.200	1067.00	103712.40	M-052
		OR					
		Crushable type such as Moorum or Gravel for grading-I @ 0.30 cum per 10 sqm	cum	108.000	165.00	17820.00	M-007
		Binding material					
		Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	165.00	4752.00	M-007
		Cost of water	KL	144.000	55.00	7920.00	M-189
4.9B (i)		(a) Using Scrining Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 10 % on (a+b+c)				35796.20	
		e) Contractor's profit @ 10 % on (a+b+c+d)				39375.82	
		Cost for 360 cum = a+b+c+d+e				433134.02	
		Rate per cum = (a+b+c+d+e)/360				1203.15	
					say	1203.15	
		OR					
4.9B (i)		(b) Using Scrining Type-A (13.2mm agg.)					
		d) Overhead charges @ 10 % on (a+b+c)				44860.64	
		e) Contractor's profit @ 10 % on (a+b+c+d)				49346.70	
		Cost for 360 cum = a+b+c+d+e				542813.74	
		Rate per cum = (a+b+c+d+e)/360				1507.82	
					say	1507.80	
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	704.00	306662.40	M-038
		Stone Screening					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Type A 13.2 mm for grading-II@ 0.12 cum per 10 sqm	cum	57.600	1067.00	61459.20	M-052
		OR					
		Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	165.00	17422.35	M-007
		OR					
		Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1650.00	142560.00	M-051
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	165.00	4752.00	M-007
		Cost of water	KL	144.000	55.00	7920.00	M-189
4.9B (ii)		(a) Using Scriming Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 10 % on (a+b+c)				36714.76	
		e) Contractor's profit @ 10 % on (a+b+c+d)				40386.23	
		Cost for 360 cum = a+b+c+d+e				444248.54	
		Rate per cum = (a+b+c+d+e)/360				1234.02	
					say	<u>1234.00</u>	
		OR					
4.9B (ii)		(b) Using Scriming Type-A (13.2mm agg.)					
		d) Overhead charges @ 10 % on (a+b+c)				41593.64	
		e) Contractor's profit @ 10 % on (a+b+c+d)				45753.00	
		Cost for 360 cum = a+b+c+d+e				503283.04	
		Rate per cum = (a+b+c+d+e)/360				1398.01	
					say	<u>1398.00</u>	

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9B (ii)		(c) Using Screening Type-B (11.2mm agg.)					
		d) Overhead charges @ 10 % on (a+b+c)				49703.72	
		e) Contractor's profit @ 10 % on (a+b+c+d)				54674.09	
		Cost for 360 cum = a+b+c+d+e				601415.01	
		Rate per cum = (a+b+c+d+e)/360				1670.60	
					say	1670.60	
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	726.00	316245.60	M-036
		Stone Screening					
		Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1650.00	142560.00	M-051
		OR					
		Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	165.00	17422.35	M-007
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	165.00	4752.00	M-007
		Cost of water	KL	144.000	55.00	7920.00	M-189
4.9B (iii)		(a) Using Screening Crushable type such as Moorum or Gravel					
		d) Overhead charges @ 10 % on (a+b+c)				37673.08	
		e) Contractor's profit @ 10 % on (a+b+c+d)				41440.38	
		Cost for 360 cum = a+b+c+d+e				455844.21	
		Rate per cum = (a+b+c+d+e)/360				1266.23	
					say	1266.25	
		OR					
4.9B (iii)		(b) Using Screening Type-B (11.2mm agg.)					
		d) Overhead charges @ 10 % on (a+b+c)				50662.04	
		e) Contractor's profit @ 10 % on (a+b+c+d)				55728.24	
		Cost for 360 cum = a+b+c+d+e				613010.68	
		Rate per cum = (a+b+c+d+e)/360				1702.81	
					say	1702.80	
		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 c					
		Unit = cum					
		Taking output =360 cum					
		a) Labour					
		Mate	day	4.160	250.00	1040.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor for crushing broken cement concrete pavement/slabs into aggregate	day	102.000	200.00	20400.00	L-13
		b) Machinery					
		Motor Grader,110 HP @ 50 cum/hr.	hour	6.000	2379.00	14274.00	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		or					
		Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	720 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Water tanker 6 KL capacity with 5 km lead @ 1 trip per hour	hour	12.000	444.00	5328.00	P&M-060
		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	55.00	3960.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				5602.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				6162.64	
		Cost for 360 cum = a+b+c+d+e				67789.04	
		Rate per cum = (a+b+c+d+e)/360				188.30	
					say	188.30	

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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					
		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.					
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 7500 sqm</i>					
		a) Labour					
		Mate	day	0.560	250.00	140.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	12.000	200.00	2400.00	L-13
		b) Machinery					
		Mechanical broom hydraulic @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Hydraulic self propelled chips spreader	hour	6.000	2618.00	15708.00	P&M-025
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	hour	6.000	554.00	3324.00	P&M-048
		Three wheel 80-100 kN Statis Roller	hour	6.00x0.65*	598.00	2332.20	P&M-059
		Bitumen pressure distributor @ 1750 sqm per hour	hour	4.280	1067.00	4566.76	P&M-004
		c) Material					
		Crushed stone aggregate 11.2 mm size	cum	97.500	1500.00	146250.00	M-051
		Bitumen (80-100 grade)	tonne	0.250	36878.00	9219.50	M-074
		d) Overhead charges @ 10 % on (a+b+c)				19349.85	
		e) Contractor's profit @ 10 % on (a+b+c+d)				21284.83	
		Cost for 7500 sqm = a+b+c+d+e				234133.14	
		Rate per sqm = (a+b+c+d+e)/7500				31.22	
					<i>say</i>	<u>31.20</u>	
		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.					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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 pave					
		<i>Unit = cum</i>					
		<i>Taking output = 225 cum (495 tonnes)</i>					
		a) Labour					
		Mate	day	0.480	250.00	120.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	10.000	200.00	2000.00	L-13
		b) Machinery					
		Wet mix plant of 75 tonne hourly capacity	hour	9.000	1320.00	11880.00	P&M-094
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum capacity	hour	6.000	1139.00	6834.00	P&M-017
		Paver finisher	hour	6.000	968.00	5808.00	P&M-035
		Three wheel 80-100 kN Statis Roller	hour	6x0.65	598.00	2332.20	P&M-059
		or					
		Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000			
		Water tanker 6 KL capacity	hour	3.000	444.00	1332.00	P&M-060
		Tipper	tonne.km	495 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent. of cost of carriage to cover cost of loading and unloading				0.00	
		c) Material (Table 400-11)					
		45 mm to 22.4 mm@ 30 per cent	cum	89.100	750.00	66825.00	M-034
		22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	775.00	92070.00	M-031
		2.36 mm to 75 micron@ 30 per cent	cum	89.100	460.00	40986.00	M-022
		Cost of water	KL	18.000	55.00	990.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				23606.72	
		e) Contractor's profit @ 10 % on (a+b+c+d)				25967.39	
		Cost for 225 cum = a+b+c+d+e				285641.31	
		Rate per cum = (a+b+c+d+e)/225				1269.52	
					<i>say</i>	<u>1269.50</u>	
		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					
		<i>Unit = cum</i>					
		<i>Taking output =21 cum</i>					
		a) Labour					
		Mate	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Water tanker 6 KL with 5 km lead and 1 trip per hour	hour	1.000	444.00	444.00	P&M-060
		Plate compactor @ 3.5 cum per hour	hour	6.000	275.00	1650.00	P&M-086
		c) Material					
		Cost of water	KL	6.000	55.00	330.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				368.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				405.24	
		Cost for 21 cum = a+b+c+d+e				4457.64	
		Rate per cum = (a+b+c+d+e)/21				212.27	
					<i>say</i>	<u>212.25</u>	
		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					
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					
		<i>Unit = cum</i>					
		<i>Taking output = 21 cum</i>					
		a) Labour					
		Mate	day	0.160	250.00	40.00	L-12

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	day	4.000	200.00	800.00	L-13
		b) Machinery					
		Water tanker with 5 km lead	hour	1.000	444.00	444.00	P&M-060
		Plate Compactor @ 3.5 cum per hour	hour	6.000	275.00	1650.00	P&M-086
		Hydraulic Excavator 1.0 cum bucket capacity @60 cum per hour	hour	0.500	1428.00	714.00	P&M-026
		Tipper 10 tonne capacity	tonne.km	52.5 x L	22.00	3465.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of transportation to cover cost of loading and unloading				346.50	
		c) Material					
		Cost of water	KL	6.000	55.00	330.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				778.95	
		e) Contractor's profit @ 10 % on (a+b+c+d)				856.85	
		Cost for 21 cum = a+b+c+d+e				9425.30	
		Rate per cum = (a+b+c+d+e)/ 21				448.82	
					say	448.80	
		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
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.					
4.17	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					
		Male	day	0.480	250.00	120.00	L-12
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		Mazdoor	day	10.000	200.00	2000.00	L-13
		b) Machinery					
		Tractor attached with rotavator @ 25 cum per hour	hour	12.000	333.00	3996.00	P&M-054
		Motor grader 110 HP	hour	6.000	2379.00	14274.00	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Water tanker 6 KL capacity	hour	6.000	444.00	2664.00	P&M-060
		c) Material					
		Aggregate at site					
		i) For 53 mm maximum size					
		63 mm to 45 mm @ 33 per cent	cum	157.460	704.00	110851.84	M-038
		22.5 mm to 5.6 mm @ 32 per cent	cum	151.060	1365.00	206196.90	M-032
		Below 5.6 mm @ 35 per cent	cum	166.680	1640.00	273355.20	M-030
		Cost of water	KL	36.000	55.00	1980.00	M-189
		Or					
		ii) For 45 mm maximum size					
		45 mm to 22.5 mm @ 5 per cent	cum	24.120	750.00	18090.00	M-034
		22.4 mm to 5.6 mm @ 50 per cent	cum	237.600	1365.00	324324.00	M-032
		Below 5.6 mm @ 45 per cent	cum	213.480	1640.00	350107.20	M-030
		Cost of water	KL	36.000	55.00	1980.00	M-189
4.17A		(i) For 53 mm maximum size					
		d) Overhead charges @ 10 % on (a+b+c)				61962.59	
		e) Contractor's profit @ 10 % on (a+b+c+d)				68158.85	
		Cost for 360.0cum = a+b+c+d+e				749747.39	
		Rate per cum = (a+b+c+d+e)/360				2082.63	
		or			say	2082.65	
4.17A		(ii) For 45 mm maximum size					
		d) Overhead charges @ 10 % on (a+b+c)				72174.32	
		e) Contractor's profit @ 10 % on (a+b+c+d)				79391.75	
		Cost for 360.0cum = a+b+c+d+e				873309.27	
		Rate per cum = (a+b+c+d+e)/360				2425.86	
					say	2425.85	
		Note					Any one of the aggregate grading may be adopted

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.17	B	By Mixing Plant :					
		<i>Unit = cum</i>					
		<i>Taking output = 225 cum (450 tonnes)</i>					
		a) Labour					
		Male	day	0.280	250.00	70.00	L-12
		Mazdoor skilled	day	1.000	300.00	300.00	L-15
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Wet mix plant @ 75 tonne per hour	hour	6.000	1650.00	9900.00	P&M-093
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Motor grader 110 HP	hour	6.000	2379.00	14274.00	P&M-032
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Water tanker 6 KL capacity	hour	3.000	444.00	1332.00	P&M-060
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		c) Material					
		Aggregate at site					
		i) For 53 mm maximum size					
		63 mm to 45 mm @ 33 per cent	cum	98.400	704.00	69273.60	M-038
		22.5 mm to 5.6 mm @ 32 per cent	cum	94.410	1365.00	128869.65	M-032
		Below 5.6 mm @ 35 per cent	cum	104.180	1640.00	170855.20	M-030
		Or					
		ii) For 45 mm maximum size					
		45 mm to 22.5 mm @ 5 per cent	cum	15.060	750.00	11295.00	M-034
		22.4 mm to 5.6 mm @ 50 per cent	cum	148.500	1365.00	202702.50	M-032
		Below 5.6 mm @ 45 per cent	cum	133.430	1640.00	218825.20	M-030
		Cost of water	KL	18.000	55.00	990.00	M-189
4.17 B	(i)	For 53 mm maximum size					
		d) Overhead charges @ 10 % on (a+b+c)				41078.65	
		e) Contractor's profit @ 10 % on (a+b+c+d)				45186.51	
		Cost for 225cum = a+b+c+d+e				497051.60	
		Rate per cum = (a+b+c+d+e)/225				2209.12	
					say	<u>2209.10</u>	
4.17 B	(ii)	For 45 mm maximum size					
		d) Overhead charges @ 10 % on (a+b+c)				47560.07	
		e) Contractor's profit @ 10 % on (a+b+c+d)				52316.08	
		Cost for 360.0cum = a+b+c+d+e				575476.85	
		Rate per cum = (a+b+c+d+e)/360				1598.55	
					say	<u>1598.55</u>	
4.18		Preparation of sub grade					
	(A)	Preparation of sub grade by excavating earth to an average depth of 22.50 cm, dressing to camber and consolidating with road roller, making good the undulations etc. and disposal of surplus earth, lead upto 50 m.					
		<i>Unit = Sq.m.</i>					
		<i>Taking output = 100 Sq.m.</i>					
		a) Labour					
		Male	day	1.800	250.00	450.00	L-12
		Mazdoor	day	18.000	200.00	3600.00	L-13
		Mazdoor for consolidation of sub-grade	day	0.270	200.00	54.00	L-13
		Mazdoor for watch & ward	day	0.054	200.00	10.80	L-13
		b) Machinery					
		Three wheel 80-100 kN Statis Roller	hour	0.430	598.00	257.14	M-189
		c) Overhead charges @ 10 % on (a+b)				437.19	
		d) Contractor's profit @ 10 % on (a+b+c)				480.91	
		Cost for 100 Sq.m. = a+b+c+d				5290.05	
		Rate per Sq.m. = (a+b+c+d)/ 100				52.90	
					say	<u>52.90</u>	
	(B)	Consolidation of sub-grade with road roller of 8 to 12 tonne capacity including making good the undulations etc. with earth or quarry spoils etc. and rerolling the sub grade.					
		<i>Unit = Sq.m.</i>					
		<i>Taking output = 100 Sq.m.</i>					
		a) Labour					
		Mazdoor for watch & ward	day	0.054	200.00	10.80	L-13
		b) Machinery					
		Three wheel 80-100 kN Statis Roller	hour	0.430	598.00	257.14	M-189
		c) Overhead charges @ 10 % on (a+b)				26.79	
		d) Contractor's profit @ 10 % on (a+b+c)				29.47	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cost for 100 Sq.m. = a+b+c+d				324.21	
		Rate per Sq.m. = (a+b+c+d)/ 100				3.24	
					say	<u>3.25</u>	

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.					
		<i>Unit = sqm</i>					
		<i>Taking output = 3500 sqm</i>					
		a) Labour					
		Male	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	2.800	354.00	991.20	P&M-031
		Air compressor 250 cfm	hour	2.800	469.00	1313.20	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	2.000	1067.00	2134.00	P&M-004
		Water tanker 6 KL capacity @ 1 trip per hour	hour	1.000	444.00	444.00	P&M-060
		c) Material					
		Bitumen emulsion @ 0.6 kg per sqm	tonne	2.100	35417.00	74375.70	M-077
		Cost of water	KL	6.000	55.00	330.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				8000.81	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8800.89	
		Cost for 3500 sqm = a+b+c+d+e				96809.80	
		Rate per sqm = (a+b+c+d+e)/3500				27.66	
					<i>say</i>	<i>27.65</i>	
		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					
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.					
		<i>Unit = sqm</i>					
		<i>Taking output = 3500 sqm</i>					
		a) Labour					
		Male	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	2.800	354.00	991.20	P&M-031
		Air compressor 250 cfm	hour	2.800	469.00	1313.20	P&M-001
		Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	1067.00	2134.00	P&M-004
		c) Material					
		Bitumen emulsion @ 0.2 kg per sqm	tonne	0.700	35417.00	24791.90	M-077
		d) Overhead charges @ 10 % on (a+b+c)				2965.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3261.53	
		Cost for 3500 sqm = a+b+c+d+e				35876.86	
		Rate per sqm = (a+b+c+d+e)/3500				10.25	
					<i>say</i>	<i>10.25</i>	
		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					
		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					
		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 su					
		<i>Unit = cum</i>					
		<i>Taking output = 205 cum (450 tonnes)</i>					
		a) Labour					
		Male	day	0.840	250.00	210.00	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	200.00	3200.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	23254.00	139524.00	P&M-021
		Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	354.00	778.80	P&M-031
		Air compressor 250 cfm	hour	2.200	469.00	1031.80	P&M-001
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2657.00	15942.00	P&M-034
		Generator 250 KVA	hour	6.000	825.00	4950.00	P&M-081
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058

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				0.00	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	458.00	1786.20	P&M-044
		Three wheel 80-100 kN Statis Roller	hour	6.00x0.65*	598.00	2332.20	P&M-059
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1136.00	4430.40	P&M-045
		c) Material					
		i) Bitumen@ 3.3 per cent of mix	tonne	14.850	36878.00	547638.30	M-074
		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					
		<i>Taking density of aggregate = 1.5 ton/cum</i>					
		Volume of aggregate = 290.1 cum					
		*Grading I (40 mm nominal size)					
		37.5 - 25 mm 15 per cent	cum	43.510	750.00	32632.50	M-049
		25 - 10 mm 45 per cent	cum	130.550	1250.00	163187.50	M-046
		10 - 5 mm 25 per cent	cum	72.530	1590.00	115322.70	M-040
		5 mm and below 15 per cent	cum	43.510	1640.00	71356.40	M-030
		or					
		GradingII(19 mm nominal size)					
		25 - 10 mm 40 per cent	cum	116.040	1250.00	145050.00	M-046
		10 - 5 mm 40 per cent	cum	116.040	1590.00	184503.60	M-040
		5 mm and below 20 per cent	cum	58.020	1640.00	95152.80	M-030
		* Any one of the alternative may be adopted as per approved design					
		(i) for Grading I (40 mm nominal size)					
		d) Overhead charges @ 10 % on (a+b+c)				111265.68	
		e) Contractor's profit @ 10 % on (a+b+c+d)				122392.25	
		Cost for 205 cum = a+b+c+d+e				1346314.73	
		Rate per cum = (a+b+c+d+e)/205 (For Grading I)				6567.39	
					say	6567.40	
		(ii) for GradingII(19 mm nominal size)					
		d) Overhead charges @ 10 % on (a+b+c)				115486.41	
		e) Contractor's profit @ 10 % on (a+b+c+d)				127035.05	
		Cost for 205 cum = a+b+c+d+e				1397385.56	
		Rate per cum = (a+b+c+d+e)/205 (For Grading-II)				6816.51	
					say	6816.50	
		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 ana					
		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					
		A					
		50 mm thick					
		<i>Unit = sqm</i>					
		<i>Taking output = 4500 sqm (225 cum)</i>					
		a) Labour					
		Male	day	0.320	250.00	80.00	L-12
		Mazdoor including for brooming of key aggregates	day	6.000	200.00	1200.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	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	2618.00	15708.00	P&M-025
		Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.570	1067.00	2742.19	P&M-004
		Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	554.00	5540.00	P&M-048
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		c) Material					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Bitumen@ 5 kg per sqm	tonne	22.500	36878.00	829755.00	M-074
		Crushed stone coarse aggregate passing 45 mm and retained on 2.8 mm sieve @ 0.06 cum per sqm	cum	270.000	540.00	145800.00	M-033
		Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.015 cum per sqm	cum	67.500	775.00	52312.50	M-031
		d) Overhead charges @ 10 % on (a+b+c)				106415.97	
		e) Contractor's profit @ 10 % on (a+b+c+d)				117057.57	
		Cost for 4500 sqm = a+b+c+d+e				1287633.22	
		Rate per sqm = (a+b+c+d+e)/4500				286.14	
					say	286.15	
		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					
		Male	day	0.400	250.00	100.00	L-12
		Mazdoor including for brooming of key aggregates	day	8.000	200.00	1600.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	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	2618.00	15708.00	P&M-025
		Bitumen pressure distributor for@ 1750 sqm per hour	hour	2.570	1067.00	2742.19	P&M-004
		Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	554.00	5540.00	P&M-048
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		c) Material					
		Bitumen@ 6.8 kg per sqm	tonne	30.600	36878.00	1128466.80	M-074
		Crushed stone coarse aggregate (loose passing 63 mm and retained on 2.8 mm sieve @ 0.09 cum per sqm	cum	405.000	575.00	232875.00	M-037
		Key aggregates passing 26.5 mm and retained on 2.8 mm sieve @ 0.018 cum per sqm	cum	81.000	600.00	48600.00	M-026
		d) Overhead charges @ 10 % on (a+b+c)				144665.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				159131.94	
		Cost for 4500 sqm = a+b+c+d+e				1750451.33	
		Rate per sqm = (a+b+c+d+e)/4500				388.99	
					say	389.90	
		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					
		Unit = sqm					
		Taking output = 3000 sqm (225 cum)					
		a) Labour					
		Male	day	0.400	250.00	100.00	L-12
		Mazdoor including for brooming of key aggregates	day	8.000	200.00	1600.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	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	2618.00	15708.00	P&M-025
		Bitumen pressure distributor for 3000 x 2 sqm @ 1750 sqm per hour	hour	3.430	1067.00	3659.81	P&M-004
		Tipper 5.5 cum capacity	hour	10.000	554.00	5540.00	P&M-048
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		c) Material					
		Bitumen30 kg per 10 sqm @ 15 kg per 10 sqm for each layer	tonne	9.000	36878.00	331902.00	M-074
		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	600.00	180000.00	M-035
		Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.000	775.00	30225.00	M-031
		d) Overhead charges @ 10 % on (a+b+c)				57975.68	
		e) Contractor's profit @ 10 % on (a+b+c+d)				63773.25	
		Cost for 3000 sqm = a+b+c+d+e				701505.74	
		Rate per sqm = (a+b+c+d+e)/3000				233.84	
					say	233.85	
		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					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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					
		<i>Unit = cum</i>					
		<i>Taking output = 195 cum (450 tonnes)</i>					
		a) Labour					
		Mate	day	0.840	250.00	210.00	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	200.00	3200.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	17197.00	103182.00	P&M-022
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2657.00	15942.00	P&M-034
		Generator 250 KVA	hour	6.000	825.00	4950.00	P&M-081
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	458.00	1786.20	P&M-044
		Three wheel 80-100 kN Statis Roller	hour	6.00x0.65*	598.00	2332.20	P&M-059
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1136.00	4430.40	P&M-045
		c) Materials					
		Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	36878.00	705476.14	M-074
		Aggregate					
		Total weight of mix = 450 tonnes					
		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 - 140 mm (Nominal Size)					
		37.5 - 25 mm 22 per cent	cum	63.190	750.00	47392.50	M-049
		25 - 10 mm 13 per cent	cum	37.340	1250.00	46675.00	M-046
		10 - 4.75 mm 19 per cent	cum	54.580	1590.00	86782.20	M-040
		4.75 mm and below 44 per cent	cum	126.390	1640.00	207279.60	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	10500.00	90510.00	M-188
		or					
		Grading - 119 mm (Nominal Size)					
		25 - 10 mm 30 per cent	cum	86.160	1250.00	107700.00	M-046
		10 - 5 mm 28 per cent	cum	80.430	1590.00	127883.70	M-040
		5 mm and below 40 per cent	cum	114.900	1640.00	188436.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	10500.00	90510.00	M-188
		* Any one of the alternative may be adopted as per approved design					
		(i) For Grading I (40 mm nominal size)					
		d) Overhead charges @ 10 % on (a+b+c)				132848.22	
		e) Contractor's profit @ 10 % on (a+b+c+d)				146133.05	
		Cost for 205 cum = a+b+c+d+e				1607463.51	
		Rate per cum = (a+b+c+d+e)/195 (For Grading I)				8243.40	
					say	<u>8243.40</u>	
		(ii) For Grading II (19 mm nominal size)					
		d) Overhead charges @ 10 % on (a+b+c)				136437.26	
		e) Contractor's profit @ 10 % on (a+b+c+d)				150080.99	
		Cost for 205 cum = a+b+c+d+e				1650890.89	
		Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				8466.11	
					say	<u>8466.10</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 anal					
		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.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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					
		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, t					
		Unit = cum					
		Taking output = 195 cum (450 tonnes)					
		a) Labour					
		Mate	day	0.840	250.00	210.00	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	200.00	3200.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	17197.00	103182.00	P&M-022
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2657.00	15942.00	P&M-034
		Generator 250 KVA	hour	6.000	825.00	4950.00	P&M-081
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	458.00	1786.20	P&M-044
		Three wheel 80-100 kN Statis Roller	hour	6.00x0.65*	598.00	2332.20	P&M-059
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1136.00	4430.40	P&M-045
		c) Material					
		* Grading I: 13 mm (Nominal Size)					
		i) Bitumen@ 4.5 per cent of weight of mix	tonne	20.250	36878.00	746779.50	M-074
		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	1125.00	64462.50	M-044
		10 - 5 mm @ 38 per cent	cum	108.870	1590.00	173103.30	M-040
		5 mm and below @ 40 per cent	cum	114.600	1640.00	187944.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	10500.00	90510.00	M-188
		or					
		Grading II: 10 mm (Nominal Size)					
		Bitumen@5 per cent of weight of mix	tonne	22.500	36878.00	829755.00	M-074
		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	1590.00	258295.50	M-040
		4.75 and below@ 41 per cent	cum	116.850	1640.00	191634.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	10500.00	90510.00	M-188
		*Any one of the alternative may be adopted as per approved design					
		(i) for Grading I (13 mm nominal size)					
		d) Overhead charges @ 10 % on (a+b+c)				140716.61	
		e) Contractor's profit @ 10 % on (a+b+c+d)				154788.27	
		Cost for 205 cum = a+b+c+d+e				1702670.98	
		Rate per cum = (a+b+c+d+e)/195 (For Grading I)				8731.65	
						say 8731.65	
5.7		(ii) for GradingII(10 mm nominal size)					
		d) Overhead charges @ 10 % on (a+b+c)				151456.13	
		e) Contractor's profit @ 10 % on (a+b+c+d)				166601.74	
		Cost for 205 cum = a+b+c+d+e				1832619.17	
		Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				9398.05	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
					say	<u>9398.05</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 ana					
		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.					
5.8	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.					
		<i>Unit = cum</i>					
		<i>Taking output = 191 cum (450 tonnes)</i>					
		a) Labour					
		Male	day	0.840	250.00	210.00	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	200.00	3200.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	17197.00	103182.00	P&M-022
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2657.00	15942.00	P&M-034
		Generator 250 KVA	hour	6.000	825.00	4950.00	P&M-081
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	458.00	1786.20	P&M-044
		Three wheel 80-100 kN Statis Roller	hour	6.00x0.65*	598.00	2332.20	P&M-059
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1136.00	4430.40	P&M-045
		c) Material					
		i) Bitumen@ 5 per cent of weight of mix	tonne	22.500	36878.00	829755.00	M-074
		ii) Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 22.5 tonnes					
		Weight of aggregate = 450 -22.50 = 427.50 tonnes					
		<i>Taking density of aggregate = 1.5 ton/cum</i>					
		Volume of aggregate = 285 cum					
		* Grading - I-19 mm (Nominal Size)					
		20 - 10 mm 35 per cent	cum	99.750	1300.00	129675.00	M-045
		10 - 5 mm 23 per cent	cum	65.550	1590.00	104224.50	M-040
		5 mm and below 40 per cent	cum	114.000	1640.00	186960.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	10500.00	90510.00	M-188
		or					
		Grading - II-13 mm (Nominal Size)					
		13.2 - 10 mm 30 per cent	cum	85.500	1125.00	96187.50	M-044
		10 - 5 mm 25 per cent	cum	71.250	1590.00	113287.50	M-040
		5 mm and below 43 per cent	cum	122.550	1640.00	200982.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	10500.00	90510.00	M-188
		*Any one of the alternative may be adopted as per approved design					
		(i) for Grading-I (13 mm nominal size)					
		d) Overhead charges @ 10 % on (a+b+c)				148549.13	
		e) Contractor's profit @ 10 % on (a+b+c+d)				163404.04	
		Cost for 205 cum = a+b+c+d+e				1797444.47	
		Rate per cum = (a+b+c+d+e)/191				9410.70	
					say	<u>9410.70</u>	
5.8		(ii) for Grading-II(10 mm nominal size)					
		d) Overhead charges @ 10 % on (a+b+c)				147508.88	
		e) Contractor's profit @ 10 % on (a+b+c+d)				162259.77	
		Cost for 205 cum = a+b+c+d+e				1784857.45	
		Rate per cum = (a+b+c+d+e)/191 (For Grading-II)				9344.80	
					say	<u>9344.80</u>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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 ana					
		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					
		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					
		<i>Unit = sqm</i>					
		<i>Taking output = 9000 sqm</i>					
		Case -I					
		:-19 mm nominal chipping size					
		a) Labour					
		Mate	day	0.440	250.00	110.00	L-12
		Mazdoor	day	9.000	200.00	1800.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	7.200	354.00	2548.80	P&M-031
		Air compressor 250 cfm	hour	7.200	469.00	3376.80	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	2618.00	15708.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	554.00	3324.00	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Bitumen pressure distributor	hour	6.000	1067.00	6402.00	P&M-004
		Smooth wheeled roller 8-10 tonne weight	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Bitumen@ 1.20 kg per sqm	tonne	10.800	36878.00	398282.40	M-074
		Crushed stone chipping,19 mm nominal size @ 0.015 cum per sqm	cum	135.000	726.00	98010.00	M-053
		d) Overhead charges @ 10 % on (a+b+c)				53974.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				59371.84	
		Cost for 9000 sqm = a+b+c+d+e				653090.24	
		Rate per sqm = (a+b+c+d+e)/9000				72.57	
					<i>say</i>	72.55	
5.9		Case - II					
		13 mm nominal size chipping					
		a) Labour					
		Mate	day	0.440	250.00	110.00	L-12
		Mazdoor	day	9.000	200.00	1800.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	7.200	354.00	2548.80	P&M-031
		Air compressor 250 cfm	hour	7.200	469.00	3376.80	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	2618.00	15708.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	554.00	3324.00	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Three wheel 80-100 kN Statis Roller	hour	6.000	598.00	3588.00	P&M-059
		c) Material					
		Bitumen@ 1.00 kg per sqm	tonne	9.000	36878.00	331902.00	M-074
		Crushed stone chipping,13 mm nominal size @ 0.01 cum per sqm	cum	90.000	1067.00	96030.00	M-052
		d) Overhead charges @ 10 % on (a+b+c)				47222.36	
		e) Contractor's profit @ 10 % on (a+b+c+d)				51944.60	
		Cost for 9000 sqm = a+b+c+d+e				571390.56	
		Rate per sqm = (a+b+c+d+e)/9000				63.49	
					<i>say</i>	63.50	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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 pr					
		<i>Unit = sqm</i>					
		<i>Taking output = 10250 sqm (205 cum)</i>					
		(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	250.00	210.00	L-12
		Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	200.00	3200.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		i) Batch type HMP 75 tonne per hour	hour	6.000	23254.00	139524.00	P&M-021
		ii) Electric Generator Set 250 KVA	hour	6.000	825.00	4950.00	P&M-081
		iii) Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		iv) Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		v) Paver finisher hydrostatic with sensor attachment	hour	6.000	2657.00	15942.00	P&M-034
		iv) Smooth wheeled/tandem roller 8-10 tonnes weight	hour	6.000	1136.00	6816.00	P&M-045
		c) Material					
		Bitumen@ 14.60 kg per 10 sqm	tonne	14.970	36878.00	552063.66	M-074
		Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	276.750	1500.00	415125.00	M-043
		d) Overhead charges @ 10 % on (a+b+c)				114616.47	
		e) Contractor's profit @ 10 % on (a+b+c+d)				126078.11	
		Cost for 10250 sqm = a+b+c+d+e				1386859.24	
		Rate per sqm = (a+b+c+d+e)/10250				135.30	
					say	<u>135.30</u>	
		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					
5.10		(ii) Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion					
		<i>Unit = sqm</i>					
		<i>Taking output = 900 sqm (24.3 cum)</i>					
		a) Labour					
		Mate	day	0.800	250.00	200.00	L-12
		Mazdoor	day	18.000	200.00	3600.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		b) Machinery					
		Concrete mixer 0.4/0.28 cum capacity	hour	6.000	220.00	1320.00	P&M-009
		Smooth wheeled steel roller 8-10 tonne	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Cationic Bitumen Emulsion @ 21.50 kg per 10 sqm	tonne	1.940	32575.00	63195.50	M-073
		Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	1500.00	36450.00	M-043
		d) Overhead charges @ 10 % on (a+b+c)				10811.35	
		e) Contractor's profit @ 10 % on (a+b+c+d)				11892.49	
		Cost for 900 sqm = a+b+c+d+e				130817.34	
		Rate per sqm = (a+b+c+d+e)/900				145.35	
					say	<u>145.35</u>	
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 10250 sqm (205 cum)</i>					
		a) Labour					
		Mate	day	0.840	250.00	210.00	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	200.00	3200.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		i) HMP of appropriate capacity.	hour	6.000	23254.00	139524.00	P&M-021
		ii) Electric Generator Set 250 KVA	hour	6.000	825.00	4950.00	P&M-081
		iii) Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		iv) Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		v) Paver finisher hydrostatic with sensor attachment	hour	6.000	2657.00	15942.00	P&M-034
		iv) Smooth wheeled 8-10 tonnes weight	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Type - A					
		* Bitumen @ 22 kg per 10 sqm	tonne	22.500	36878.00	829755.00	M-074
		Stone crushed aggregates 11.2 mm to 0.09 @ 0.27 cum per 10 sqm	cum	276.750	850.00	235237.50	M-041
		or					
		Type - B					
		Bitumen @ 19 kg per 10 sqm	tonne	19.480	36878.00	718383.44	M-074
		Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	276.750	715.00	197876.25	M-042
		d) Overhead charges @ 10 % on (a+b+c)				123990.05	
		e) Contractor's profit @ 10 % on (a+b+c+d)				136389.06	
		Cost for 10250 sqm = a+b+c+d+e				1500279.61	
		Rate per sqm = (a+b+c+d+e)/10250				146.37	
					say	146.35	
		* 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					
		<i>Unit = sqm</i>					
		<i>Taking output = 10250 sqm (92.25 cum)</i>					
		(i) Case - I : Type A					
		a) Labour					
		Mate	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Hydraulic self propelled chip spreader	hour	6.000	2618.00	15708.00	P&M-025
		Tipper 5.5 cum capacity	hour	6.000	554.00	3324.00	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Smooth wheeled roller 8 -10 tonne weight	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Bitumen @ 9.80 kg per 10 sqm	tonne	10.050	36878.00	370623.90	M-074
		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	1640.00	151290.00	M-050
		d) Overhead charges @ 10 % on (a+b+c)				55818.99	
		e) Contractor's profit @ 10 % on (a+b+c+d)				61400.89	
		Cost for 10250 sqm = a+b+c+d+e				675409.78	
		Rate per sqm = (a+b+c+d+e)/10250				65.89	
					say	65.90	
		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.					
		<i>Unit = sqm</i>					
		<i>Taking output = 7858 sqm (47.16 cum)</i>					
		a) Labour					
		Mate	day	0.160	250.00	40.00	L-12
		Mazdoor	day	4.000	200.00	800.00	L-13
		b) Machinery					
		HMP of 75 tonnes/hour.	hour	2.000	17197.00	34394.00	P&M-022
		Electric Generator Set 250 KVA	hour	2.000	825.00	1650.00	P&M-081
		Front end loader 1 cum bucket capacity	hour	2.000	1139.00	2278.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	104 x 'L'	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Paver finisher hydrostatic with sensor attachment	hour	2.000	2657.00	5314.00	P&M-034
		Smooth wheeled 8-10 tonnes capacity	hour	2.000	458.00	916.00	P&M-044
		c) Material					
		Bitumen@ 6.80 kg per 10 sqm	tonne	5.340	36878.00	196928.52	M-074
		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	1640.00	77342.40	M-050
		d) Overhead charges @ 10 % on (a+b+c)				31966.29	
		e) Contractor's profit @ 10 % on (a+b+c+d)				35162.92	
		Cost for 7858 sqm = a+b+c+d+e				386792.13	
		Rate per sqm = (a+b+c+d+e)/7858				49.22	
					say	49.20	
		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					
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 a					
		Unit = sqm					
		Taking output = 35.00 sqm (0.87 cum) assuming a density of 2.3 tonnes/cum-2 tonnes					
		a) Labour					
		Male	day	0.440	250.00	110.00	L-12
		Mazdoor	day	10.000	200.00	2000.00	L-13
		Mazdoor skilled	day	1.000	300.00	300.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	0.060	354.00	21.24	P&M-031
		Air compressor 250 cfm	hour	0.060	469.00	28.14	P&M-001
		Mastic cooker 1 tonne capacity	hour	6.000	62.00	372.00	P&M-030
		Bitumen boiler 1500 litres capacity	hour	6.000	197.00	1182.00	P&M-005
		Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	388.00	388.00	P&M-053
		c) Material					
		Base mastic (without coarse aggregates) = 60 per cent					
		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 CRRI 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	36878.00	7523.11	M-074
		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	460.00	179.40	M-021
		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	10500.00	3780.00	M-188
		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	1500.00	825.00	M-043
		v) Pre-coated stone chips of 13.2 mm nominal size for skid resistance = $35 \times 0.005/10 = 0.018$	cum	0.018	950.00	17.10	M-142
		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	37.00	18.50	M-074
		d) Overhead charges @ 10 % on (a+b+c)				1674.45	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1841.89	
		Cost for 35.00 sqm = a+b+c+d+e				20260.84	
		Rate per sqm = (a+b+c+d+e)/35				578.88	
					say	578.90	
		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 CRRI for a specific case and is meant for estimating purposes only. Actual design is required to be done for each case.					
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					
		(i) 5 mm thickness					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<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					
		Male	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1001.00	6006.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	554.00	3324.00	P&M-048
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1235.00	7410.00	P&M-037
		Water tanker 6 KL capacity	hour	2.000	444.00	888.00	P&M-060
		c) Material					
		Residual Binder @ 11 per cent of mix 80 x 2.2 x 0.11	tonne	19.360	35417.00	685673.12	M-077
		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	1640.00	167411.20	M-030
		Filler @ 2 per cent of total mix = 80 x 2.2 x 0.02	tonne	3.520	10500.00	36960.00	M-188
		Cost of water	KL	12.000	55.00	660.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				92136.43	
		e) Contractor's profit @ 10 % on (a+b+c+d)				101350.08	
		Cost for 16000 sqm = a+b+c+d+e				1114850.83	
		Rate per sqm = (a+b+c+d+e)/16000				69.68	
					<i>say</i>	<u>69.70</u>	
5.75	(ii)	3 mm thickness					
		<i>Unit = sqm</i>					
		<i>Taking output = 20000 sqm (60 cum)</i>					
		a) Labour					
		Male	day	0.200	250.00	50.00	L-12
		Mazdoor	day	5.000	200.00	1000.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1001.00	6006.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	554.00	3324.00	P&M-048
		Water tanker 6 KL capacity	hour	2.000	444.00	888.00	P&M-060
		c) Material					
		Residual Binder @ 13 per cent of mix = 60 x 2.2 x 0.13	tonne	17.160	35417.00	607755.72	M-077
		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	460.00	34408.00	M-022
		Filler @ 2 per cent of total mix = 60x 2.2 x 0.02	tonne	2.640	10500.00	27720.00	M-188
		Cost of water	KL	12.000	55.00	660.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				69358.37	
		e) Contractor's profit @ 10 % on (a+b+c+d)				76294.21	
		Cost for 30000 sqm = a+b+c+d+e				839236.30	
		Rate per sqm = (a+b+c+d+e)/20000				41.96	
					<i>say</i>	<u>41.96</u>	
5.75	(iii)	1.5 mm thickness					
		<i>Unit = sqm</i>					
		<i>Taking output = 24000 sqm (36 cum)</i>					
		a) Labour					
		Male	day	0.200	250.00	50.00	L-12
		Mazdoor	day	5.000	200.00	1000.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1001.00	6006.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	554.00	3324.00	P&M-048
		Water tanker 6 KL capacity	hour	2.000	444.00	888.00	P&M-060
		c) Material					
		Residual Binder @ 16 per cent of mix, 36 x 2.2 x 0.16	tonne	12.670	35417.00	448733.39	M-077

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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	460.00	19918.00	M-022
		Filler @ 2 per cent of total mix = 36x 2.2 x 0.02	tonne	1.580	10500.00	16590.00	M-188
		Cost of water	KL	12.000	55.00	660.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				50894.14	
		e) Contractor's profit @ 10 % on (a+b+c+d)				55983.55	
		Cost for 24000 sqm = a+b+c+d+e				615819.08	
		Rate per sqm = (a+b+c+d+e)/24000				25.66	
					say	<u>25.65</u>	
		Note 1. Tack coat, if required to be provided, before laying slurry seal may be measured and paid separately					
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. <i>Unit = sqm</i> <i>Taking output = 10500 sqm</i>					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Bitumen emulsion pressure distributor @ 1750 sqm per hour	tonne	6.000	1067.00	6402.00	P&M-004
		c) Material					
		Bitumen emulsion @ 0.75 kg per sqm	tonne	7.880	35417.00	279085.96	M-077
		d) Overhead charges @ 10 % on (a+b+c)				29105.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				32016.16	
		Cost for 10500 sqm = a+b+c+d+e				352177.71	
		Rate per sqm = (a+b+c+d+e)/10500				33.54	
					say	<u>33.55</u>	
		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	250.00	40.00	L-12
		Mazdoor for pre-coating of grit	day	4.000	200.00	800.00	L-13
		b) Material					
		Crushed stone grit 3 mm size @ 3.75 kg per sqm	cum	26.250	500.00	13125.00	M-024
		Bitumen emulsion for pre-coating grit @ 2 per cent of grit, 39.38 x 0.02	tonne	0.790	35417.00	27979.43	M-077
						41944.43	
						3.99	
					say	<u>4.00</u>	
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 <i>Unit = cum</i> <i>Taking output = 205 cum (450 tonne)</i>					
		(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	250.00	210.00	L-12
		Mazdoor	day	16.000	200.00	3200.00	L-13
		Mazdoor skilled	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	330.00	1980.00	P&M-077
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead = 0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Paver finisher	hour	6.000	2657.00	15942.00	P&M-034
		Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1235.00	4816.50	P&M-037
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1136.00	4430.40	P&M-045
		c) Material					
		Bitumen emulsion @ 8 per cent	tonne	36.000	35417.00	1275012.00	M-077
		Filler (lime)@ 2 per cent	tonne	9.000	10500.00	94500.00	M-188
		Aggregates size 19 to 9.5 mm - 450 x 0.25 x 1/1.5	cum	75.000	1300.00	97500.00	M-045
		Aggregates size 9.5 to 6 mm - 450 x 0.29 x 1/1.5	cum	87.000	1590.00	138330.00	M-040
		Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	1640.00	177120.00	M-030
		d) Overhead charges @ 10 % on (a+b+c)				182566.49	
		e) Contractor's profit @ 10 % on (a+b+c+d)				200823.14	
		Cost for 205 cum = a+b+c+d+e				2209054.53	
		Rate per cum = (a+b+c+d+e)/205				10775.88	
					say	10775.90	
		(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, thei					
5.18	(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	250.00	210.00	L-12
		Mazdoor	day	16.000	200.00	3200.00	L-13
		Mazdoor skilled	day	5.000	300.00	1500.00	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	330.00	1980.00	P&M-077
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Paver finisher	hour	6.000	2657.00	15942.00	P&M-034
		Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1235.00	4816.50	P&M-037
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1136.00	4430.40	P&M-045
		c) Material					
		Bitumen emulsion @ 8 per cent	tonne	36.000	35417.00	1275012.00	M-077
		Filler (lime)@ 2 per cent	tonne	9.000	10500.00	94500.00	M-188
		Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	850.00	63750.00	M-048
		Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	1365.00	122850.00	M-047
		Aggregates size 6 to 0.075 mm - 450 x 0.35 x 1/1.5	cum	105.000	1640.00	172200.00	M-030
		d) Overhead charges @ 10 % on (a+b+c)				177151.49	
		e) Contractor's profit @ 10 % on (a+b+c+d)				194866.64	
		Cost for 205 cum = a+b+c+d+e				2143533.03	
		Rate per cum = (a+b+c+d+e)/205				10456.26	
					say	10456.25	
		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, thei					
5.18	(iii)	Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate					
		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					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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					
		Male	day	0.840	250.00	210.00	L-12
		Mazdoor	day	16.000	200.00	3200.00	L-13
		Mazdoor skilled	day	5.000	300.00	1500.00	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 average output of 75 tonnes per hour	hour	6.000	330.00	1980.00	P&M-077
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Paver finisher	hour	6.000	2657.00	15942.00	P&M-034
		Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1235.00	4816.50	P&M-037
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1136.00	4430.40	P&M-045
		c) Material					
		Cutback bitumen @ 5 per cent	tonne	22.500	35855.00	806737.50	M-076
		Filler (lime)@ 2 per cent	tonne	9.000	10500.00	94500.00	M-188
		Aggregates size 19 to 9.5 mm - 450 x 0.26 x 1/1.5	cum	78.000	1300.00	101400.00	M-045
		Aggregates size 9.5 to 6 mm - 450 x 0.31 x 1/1.5	cum	93.000	1590.00	147870.00	M-040
		Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	1640.00	177120.00	M-030
		d) Overhead charges @ 10 % on (a+b+c)				137083.04	
		e) Contractor's profit @ 10 % on (a+b+c+d)				150791.34	
		Cost for 205 cum = a+b+c+d+e				1658704.78	
		Rate per cum = (a+b+c+d+e)/205				8091.24	
					say	8091.25	
		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, thei					
5.18	(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	250.00	210.00	L-12
		Mazdoor	day	16.000	200.00	3200.00	L-13
		Mazdoor skilled	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		Drum mix plant for cold mixes 60-90 tonne per hour producing output of 75 tonnes per hour	hour	6.000	330.00	1980.00	P&M-077

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Paver finisher	hour	6.000	2657.00	15942.00	P&M-034
		Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1235.00	4816.50	P&M-037
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1136.00	4430.40	P&M-045
		c) Material					
		Cutback bitumen on @ 5 per cent	tonne	22.500	35855.00	806737.50	M-076
		Filler (lime)@ 2 per cent	tonne	9.000	10500.00	94500.00	M-188
		Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	850.00	63750.00	M-048
		Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	1365.00	122850.00	M-047
		Aggregates size 6 to 0.075 mm - 450 x0.38 x 1/1.5	cum	114.000	1640.00	186960.00	M-030
		d) Overhead charges @ 10 % on (a+b+c)				131800.04	
		e) Contractor's profit @ 10 % on (a+b+c+d)				144980.04	
		Cost for 205 cum = a+b+c+d+e				1594780.48	
		Rate per cum = (a+b+c+d+e)/205				7779.42	
					say	<u>7779.40</u>	
		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, thei					
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 t					
		<i>Unit = cum</i>					
		<i>Taking output = 205 cum (450 tonne)</i>					
		a) Labour					
		Male	day	0.840	250.00	210.00	L-12
		Mazdoor	day	16.000	200.00	3200.00	L-13
		Mazdoor skilled	day	5.000	300.00	1500.00	L-15
		b) Machinery					
		Hot Mix Plant of appropriate capacity but not less than 75 tonnes/hour	hour	6.000	13752.00	82512.00	P&M-023
		Electric generator set 250 KVA	hour	6.000	825.00	4950.00	P&M-081
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Paver finisher	hour	6.000	2657.00	15942.00	P&M-034

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65	458.00	1786.20	P&M-044
		Three wheel 80-100 kN Statis Roller	hour	6.00x0.65	598.00	2332.20	P&M-059
		Finish rolling with 6-8 tonnes smooth wheeled tandem rollers.	hour	6.00x0.65	1136.00	4430.40	P&M-045
		c) Material					
		Composition of mix (450 tonne) is assumed to be as under:-					
		Density 2.20 tonne per cum					
		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	36878.00	829755.00	M-074
		Filler (lime) @ 2 per cent	tonne	9.000	10500.00	94500.00	M-188
		Sand of size 4.75 to 0.075 mm - 450 x 0.93 x 1/1.5	cum	288.620	490.00	141423.80	M-004
		d) Overhead charges @ 10 % on (a+b+c)				118937.56	
		e) Contractor's profit @ 10 % on (a+b+c+d)				130831.32	
		Cost for 205 cum = a+b+c+d+e				1439144.48	
		Rate per cum = (a+b+c+d+e)/205				7020.22	
						say 7020.20	
		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 anal					
5.21	522	Crack Prevention Courses					
		(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					
		Unit = sqm					
		Taking output = 10500 sqm					
		a) Labour					
		Mate	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Hydraulic Chip spreader	hour	6.000	2618.00	15708.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Modified binder	tonne	9.450	40210.00	379984.50	M-078
		Crushed stone aggregates 5.6 mm size	cum	105.000	1640.00	172200.00	M-050
		d) Overhead charges @ 10 % on (a+b+c)				58324.05	
		e) Contractor's profit @ 10 % on (a+b+c+d)				64156.46	
		Cost for 10500 sqm = a+b+c+d+e				705721.01	
		Rate per sqm = (a+b+c+d+e)/10500				67.21	
						say 67.20	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.21	(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					
		<i>Unit = sqm</i>					
		<i>Taking output = 10500 sqm</i>					
		a) Labour					
		Male	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm capacity	hour	6.000	469.00	2814.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Hydraulic Chip spreader	hour	6.000	2618.00	15708.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Modified binder	tonne	11.550	40210.00	464425.50	M-078
		Crushed stone chipping 11.2 mm size	cum	105.000	1650.00	173250.00	M-051
		d) Overhead charges @ 10 % on (a+b+c)				66873.15	
		e) Contractor's profit @ 10 % on (a+b+c+d)				73560.47	
		Cost for 10500 sqm = a+b+c+d+e				809165.12	
		Rate per sqm = (a+b+c+d+e)/10500				77.06	
					<i>say</i>	<u>77.06</u>	
5.21	(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, spraye					
		<i>Unit = sqm</i>					
		<i>Taking output = 10500 sqm</i>					
		a) Labour					
		Male	day	0.240	250.00	60.00	L-12
		Mazdoor	day	6.000	200.00	1200.00	L-13
		Mazdoor skilled	day	2.000	300.00	600.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	354.00	2124.00	P&M-031
		Air compressor 250 cfm capacity	hour	6.000	469.00	2814.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1067.00	6402.00	P&M-004
		Hydraulic Chip spreader	hour	6.000	2618.00	15708.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	458.00	2748.00	P&M-044
		c) Material					
		Modified binder	tonne	15.750	40210.00	633307.50	M-078
		Crushed stone aggregates 11.2 mm size	cum	126.000	1650.00	207900.00	M-051
		d) Overhead charges @ 10 % on (a+b+c)				87286.35	
		e) Contractor's profit @ 10 % on (a+b+c+d)				96014.99	
		Cost for 10500 sqm = a+b+c+d+e				1056164.84	
		Rate per sqm = (a+b+c+d+e)/10500				100.59	
					<i>say</i>	<u>100.60</u>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note					
		In case 2nd coat is also required to be provided, material provided for the 2nd coat shall be as per table 500-47.					
5.22	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 r					
		<i>Unit = cum</i>					
		<i>Taking output = 205 cum (450 tonnes)</i>					
		(i) 75 mm thickness					
		a) Labour					
		Male	day	1.000	250.00	250.00	L-12
		Mazdoor	day	12.000	200.00	2400.00	L-13
		Mazdoor skilled	day	5.000	300.00	1500.00	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	17050.00	102300.00	P&M-064
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum capacity	hour	6.000	1139.00	6834.00	P&M-017
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2657.00	15942.00	P&M-034
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1235.00	4816.50	P&M-037
		Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	458.00	1786.20	P&M-044
		Water tanker 6 KL capacity	hour	1.000	444.00	444.00	P&M-060
		c) Material					
		Bitumen emulsion @ 45 litres per tonne	tonne	20.250	35417.00	717194.25	M-077
		Crushed stone aggregates 40 mm nominal size	cum	297.000	540.00	160380.00	M-055
		Cost of water	KL	6.000	55.00	330.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				101846.70	
		e) Contractor's profit @ 10 % on (a+b+c+d)				112031.36	
		Cost for 10500 sqm = a+b+c+d+e				1232345.01	
		Rate per sqm = (a+b+c+d+e)/205				6011.44	
					<i>say</i>	6011.45	
		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		(ii) 40 mm thickness					
		a) Labour					
		Male	day	1.000	250.00	250.00	L-12
		Mazdoor	day	12.000	200.00	2400.00	L-13
		Mazdoor skilled	day	5.000	300.00	1500.00	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	17050.00	102300.00	P&M-064
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum capacity	hour	6.000	1139.00	6834.00	P&M-017
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2657.00	15942.00	P&M-034
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1235.00	4816.50	P&M-037
		Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	458.00	1786.20	P&M-044
		Water tanker 6 KL capacity	hour	1.000	444.00	444.00	P&M-060
		c) Material					
		Bitumen emulsion @ 70 litres per tonne	tonne	31.500	35417.00	1115635.50	M-077
		Crushed stone aggregates 14 mm nominal size	cum	287.000	970.00	278390.00	M-052
		Cost of water	KL	6.000	55.00	330.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				153491.82	
		e) Contractor's profit @ 10 % on (a+b+c+d)				168841.00	
		Cost for 10500 sqm = a+b+c+d+e				1857251.02	
		Rate per sqm = (a+b+c+d+e)/205				9059.76	
						say 9059.75	
5.22	(iii)	25 mm thickness					
		a) Labour					
		Male	day	1.000	250.00	250.00	L-12
		Mazdoor	day	12.000	200.00	2400.00	L-13
		Mazdoor skilled	day	5.000	300.00	1500.00	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	17050.00	102300.00	P&M-064
		Electric generator 125 KVA	hour	6.000	715.00	4290.00	P&M-018
		Front end loader 1 cum capacity	hour	6.000	1139.00	6834.00	P&M-017
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2657.00	15942.00	P&M-034
		Tipper 10 tonne capacity	tonne.km	450 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Pneumatic tyred roller	hour	6.00x0.65*	1235.00	4816.50	P&M-037
		Smooth wheeled steel roller	hour	6.00x0.65*	458.00	1786.20	P&M-044
		Water tanker 6 KL capacity	hour	1.000	444.00	444.00	P&M-060
		c) Material					
		Bitumen emulsion @ 85 litres per tonne	tonne	38.250	35417.00	1354700.25	M-077
		Crushed stone aggregates 6 mm nominal size	cum	270.000	1640.00	442800.00	M-050
		Cost of water	KL	6.000	55.00	330.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				193839.30	
		e) Contractor's profit @ 10 % on (a+b+c+d)				213223.22	
		Cost for 10500 sqm = a+b+c+d+e				2345455.47	
		Rate per sqm = (a+b+c+d+e)/205				11441.25	
						say 11441.25	

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 blend					
		<i>Unit = cum</i>					
		<i>Taking output = 450 cum (990 tonne)</i>					
		a) Labour					
		Mate	day	1.120	250.00	280.00	L-12
		Mazdoor skilled	day	6.000	300.00	1800.00	L-15
		Mazdoor	day	22.000	200.00	4400.00	L-13
		b) Machinery					
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	3850.00	23100.00	P&M-068
		Electric generator 100 KVA	hour	6.000	693.00	4158.00	P&M-080
		Paver with electronic sensor	hour	6.000	2657.00	15942.00	P&M-034
		Vibratory roller 8-10 t capacity	hour	8.000	598.00	4784.00	P&M-059
		Water tanker 6 KL capacity	hour	8.000	444.00	3552.00	P&M-060
		Tipper	tonne.km	990 x L	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		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	810.00	328050.00	M-052 and M-054
		Coarse Sand as per IS: 383 @ 0.45 cum/cum of concrete	cum	203.000	490.00	99470.00	M-004
		Cement @ 150 kg/cum of concrete	tonne	67.500	7989.00	539257.50	M-081
		Cost of water	KL	48.000	55.00	2640.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				103426.75	
		e) Contractor's profit @ 10 % on (a+b+c+d)				113769.43	
		Cost for 205 cum = a+b+c+d+e				1251463.68	
		Rate per cum = (a+b+c+d+e)/450				2781.03	
					say	2781.05	
		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 b					
		<i>Unit = cum</i>					
		<i>Taking output = 1050 cum (2415 tonne)</i>					
		a) Labour					
		Mate	day	2.000	250.00	500.00	L-12
		Mazdoor skilled	day	15.000	300.00	4500.00	L-15
		Mazdoor	day	35.000	200.00	7000.00	L-13
		b) Machinery					
		Road Sweeper @ 1250 sqm per hour	hour	2.800	354.00	991.20	P&M-031
		Front end loader 1 cum bucket capacity	hour	18.000	1139.00	20502.00	P&M-017
		Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6.000	2882.00	17292.00	P&M-067
		Electric generator 250 KVA	hour	6.000	825.00	4950.00	P&M-081
		Slip form paver with electronic sensor	hour	6.000	2657.00	15942.00	P&M-006
		Water tanker 6 KL capacity	hour	36.000	444.00	15984.00	P&M-060
		Transit truck agitator 5 cum capacity.	tonne.km	2415xL	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Concrete joint cutting machine .	hour	12.000	88.00	1056.00	P&M-083
		Texturing machine .	hour	12.000	220.00	2640.00	P&M-088
		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	810.00	765450.00	M-052 and M-054

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Sand as per IS: 383 and conforming to clause 602.2.4 @ 0.45 cum/cum of concrete	cum	473.000	490.00	231770.00	M-004
		Cement 43 grade @ 400 kg/cum of concrete	tonne	414.000	7989.00	3307446.00	M-081
		32 mm mild steel dowel bars of grade S 240	tonne	9.450	38219.00	361169.55	M-126
		16 mm deformed steel tie bars of grade S 415	tonne	1.170	38219.00	44716.23	M-082
		Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	25.00	91875.00	M-164
		Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	16.330	500.00	8165.00	M-141
		Joint sealant	kg	875.000	275.00	240625.00	M-120
		Sealant primer	kg	116.670	110.00	12833.70	M-097
		Plastic sheath, 1.25 mm thick for dowel bars	sqm	46.670	0.80	37.34	M-138
		Curing compound	liter	1850.000	45.00	83250.00	M-090
		Super plastisizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	50.00	103500.00	M-180
		Cost of water	KL	216.000	55.00	11880.00	M-189
		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 an				52627.18	
		d) Overhead charges @ 10 % on (a+b+c)				540670.22	
		e) Contractor's profit @ 10 % on (a+b+c+d)				594737.24	
		Cost for 1050cum = a+b+c+d+e				6542109.65	
		Rate per cum = (a+b+c+d+e)/1050				6230.58	
					say	6230.60	
		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 ratio15:1 and minimum cement content of 200 kg/cum, aggregate gradation					
		Unit = cum					
		Taking output = 450 cum (990 tonne)					
		a) Labour					
		Mate	day	1.200	250.00	300.00	L-12
		Mazdoor skilled	day	7.000	300.00	2100.00	L-15
		Mazdoor	day	23.000	200.00	4600.00	L-13
		b) Machinery					
		Front end loader 1 cum bucket capacity	hour	6.000	1139.00	6834.00	P&M-017
		Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	3850.00	23100.00	P&M-068
		Electric generator 100 KVA	hour	6.000	693.00	4158.00	P&M-080
		Paver with electronic sensor @ 75 cum/hr.	hour	6.000	2657.00	15942.00	P&M-034
		Vibratory roller 8-10 t capacity	hour	8.000	598.00	4784.00	P&M-059
		Water tanker with 5 km lead 6 KL capacity	hour	8.000	444.00	3552.00	P&M-060
		Tipper	tonne.km	990xL	22.00	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		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	810.00	328050.00	M-052 and M-054
		Sand as per IS: 383 and conforming to clause 602.2.3 @ 0.45 cum/cum of concrete	cum	203.000	490.00	99470.00	M-004
		Cement @ 200 kg/cum of concrete	tonne	90.000	7989.00	719010.00	M-081
		Cost of water	KL	48.000	55.00	2640.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				121454.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				133599.40	
		Cost for 450cum = a+b+c+d+e				1469593.40	
		Rate per cum = (a+b+c+d+e)/450				3265.76	
					say	3265.75	
		Note	The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.				

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					
		<i>Unit = Running metre</i>					
		<i>Taking output = 360 metre</i>					
		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	250.00	180.00	L-12
		Mason	day	2.000	300.00	600.00	L-11
		Mazdoor	day	16.000	200.00	3200.00	L-13
		b) Machinery					
		Kerb casting machine @ 60 metres/hour	hour	6.000	308.00	1848.00	P&M-029
		Concrete mixer 0.48/0.28 cum capacity	hour	12.000	220.00	2640.00	P&M-009
		Water tanker6 KL capacity	hour	5.000	444.00	2220.00	P&M-060
		c) Material					
		Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	726.00	15819.54	M-053
		Coarse sand 30 per cent	cum	10.900	490.00	5341.00	M-005
		Cement 11 per cent	tonne	5.700	7989.00	45537.30	M-081
		Cost of water	KL	30.000	55.00	1650.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				7903.58	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8693.94	
		Cost for 360 meter = a+b+c+d+e				95633.37	
		Rate per metre = (a+b+c+d+e)/360				265.65	
					say	265.65	
		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	250.00	30.00	L-12
		Mason	day	1.000	300.00	300.00	L-11
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Kerb casting machine @ 60 metres/hour	hour	6.000	308.00	1848.00	P&M-029
		Concrete batching and mixing plant @ 15 cum/hr.	hour	1.600	1848.00	2956.80	P&M-003
		Water tanker6 KL capacity	hour	5.000	444.00	2220.00	P&M-060
		Tipper 5.5 cum capacity	hour	6.000	554.00	3324.00	P&M-048
		c) Material					
		Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	660.00	14381.40	M-053
		Coarse sand 30 per cent	cum	10.900	490.00	5341.00	M-004
		Cement 11 per cent	tonne	5.700	7989.00	45537.30	M-081
		Cost of water	KL	30.000	55.00	1650.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				7798.85	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8578.74	
		Cost for 360 meter = a+b+c+d+e				94366.09	
		Rate per metre = (a+b+c+d+e)/360				262.13	
					say	262.13	
8.2	408	Cast in Situ Cement Concrete M 20 Kerb with Channel					
		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, ke					
		A Using Concrete Mixer					
		<i>Unit = Running metre</i>					
		<i>Taking output = 300 metre length</i>					
		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	250.00	180.00	L-12
		Mason	day	2.000	300.00	600.00	L-11
		Mazdoor	day	16.000	200.00	3200.00	L-13
		b) Machinery					
		Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	308.00	1848.00	P&M-029
		Concrete mixer 0.48/0.28	hour	16.000	220.00	3520.00	P&M-009
		Water tanker6 KL capacity	hour	6.000	444.00	2664.00	P&M-060
		c) Material					
		Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	726.00	26564.34	M-053
		Coarse sand 30 per cent	cum	18.300	490.00	8967.00	M-005

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cement 10 per cent	tonne	9.010	7989.00	71980.89	M-081
		Cost of water	KL	36.000	55.00	1980.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				12150.42	
		e) Contractor's profit @ 10 % on (a+b+c+d)				13365.47	
		Cost for 360 meter = a+b+c+d+e				147020.12	
		Rate per metre = (a+b+c+d+e)/300				490.07	
					say	490.05	
8.2	B	Using Concrete Batching and Mixing Plant					
		<i>Unit = Running metre</i>					
		<i>Taking output = 300 metre length</i>					
		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	250.00	30.00	L-12
		Mason	day	1.000	300.00	300.00	L-11
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	308.00	1848.00	P&M-029
		Concrete batching and mixing plant @ 15 cum/hr.	hour	2.700	1848.00	4989.60	P&M-003
		Water tanker 6 KL capacity	hour	6.000	444.00	2664.00	P&M-060
		Tipper of 5.5 cum capacity	hour	6.000	554.00	3324.00	P&M-048
		c) Material					
		Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	660.00	24149.40	M-053
		Coarse sand 30 per cent	cum	18.300	490.00	8967.00	M-004
		Cement 10 per cent	tonne	9.010	7989.00	71980.89	M-081
		Cost of water	KL	36.000	55.00	1980.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				12063.29	
		e) Contractor's profit @ 10 % on (a+b+c+d)				13269.62	
		Cost for 300 meter = a+b+c+d+e				145965.80	
		Rate per metre = (a+b+c+d+e)/300				486.55	
					say	486.55	
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)					
		<i>Details for 100 letters of 16 cm height i.e. 1600 cm</i>					
		<i>Unit = per cm height per letter</i>					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Painter	day	2.000	300.00	600.00	L-18
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Material					
		Paint	Litre	0.700	180.00	126.00	M-131
		c) Overhead charges @ 10 % on (a+b)				95.60	
		d) Contractor's profit @ 10 % on (a+b+c)				105.16	
		Cost for 1600 cm = a+b+c+d				1156.76	
		Rate per cm height per letter = (a+b+c+d)/1600				0.72	
					say	0.70	
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					
		<i>Unit = per cm height per letter</i>					
		a) Labour					
		Mate	day	0.070	250.00	17.50	L-12
		Painter 1st class	day	1.250	300.00	375.00	L-18
		Mazdoor	day	0.500	200.00	100.00	L-13
		b) Material					
		Paint	Litre	0.500	180.00	90.00	M-131
		c) Overhead charges @ 10 % on (a+b)				58.25	
		d) Contractor's profit @ 10 % on (a+b+c)				64.08	
		Cost for 1600 cm = a+b+c+d				704.83	
		Rate per cm height per letter = (a+b+c+d)/1600				0.44	
					say	0.45	
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 s					
		<i>Unit = sqm</i>					
		<i>Taking output = 0.9 sqm</i>					
		i) Excavation for foundation	cum	0.216	203.30	43.91	Item No. 3.13
		ii) Cement concrete M15 grade	cum	0.120	5055.20	606.62	Item 12.8 (A)
		iii) Painting angle iron post two coats	sqm	0.430	53.30	22.92	Item 8.9
		a) Labour (For fixing at site)					
		Mate	day	0.010	250.00	2.50	L-12
		Mazdoor	day	0.200	200.00	40.00	L-13
		b) Material					
		Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 metres long	kg	19.000	45.22	859.16	M-179 /1000
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size 0.9 sqm	sqm	0.900	132.00	118.80	M-061
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.					
		c) Machinery					
		Tractor-trolley	hour	0.020	388.00	7.76	P&M-053
		d) Overhead charges @ 10 % on (a+b+c)				102.82	
		e) Contractor's profit @ 10 % on (a+b+c+d)				113.10	
		Cost for 0.9 sqm =I+ii+iii+ a+b+c+d+e				1917.60	
		Rate per sqm (for sign having area upto 0.9 sqm) = (I+ii+iii+a+b+c+d+e)/0.90				2130.67	
						<i>say</i> <u>2130.45</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 ang					
		<i>Unit = sqm</i>					
		<i>Taking output = 1.50 sqm</i>					
		i) Excavation for foundation	cum	0.430	203.30	87.42	Item No. 3.13
		ii) Cement concrete M15 grade	cum	0.240	5055.20	1213.25	Item 12.8 (A)
		iii) Painting angle iron post 2 coats	sqm	0.860	53.30	45.84	Item 8.9
		a) Labour (For fixing at site)					
		Mate	day	0.010	250.00	2.50	L-12
		Mazdoor	day	0.300	200.00	60.00	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	45.22	1718.32	M-179 /1000
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting	sqm	1.500	132.00	198.00	M-061
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.					
		c) Machinery					
		Tractor-trolley	hour	0.020	388.00	7.76	P&M-053
		d) Overhead charges @ 10 % on (a+b+c)				192.41	
		e) Contractor's profit @ 10 % on (a+b+c+d)				217.90	
		Cost for 1.5 sqm =I+ii+iii+ a+b+c+d+e				3743.39	
		Rate per sqm (for sign having area more than 0.9 sqm) = (I+ii+iii+a+b+c+d+e)/1.50				4159.33	
						<i>say</i> <u>4158.85</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					
8.8	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					
		<i>Unit = sqm</i>					
		<i>Taking output = 40 sqm</i>					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Painter	day	2.000	300.00	600.00	L-18
		Mazdoor	day	1.000	200.00	200.00	L-13

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Material					
		Paint conforming to requirement of clause 803.3.	Litre	6.000	160.00	960.00	M-132
		Add for scaffolding @ 1 per cent of labour cost where required				9.60	
		Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				89.50	
		c) Overhead charges @ 10 % on (a+b)				188.91	
		d) Contractor's profit @ 10 % on (a+b+c)				207.80	
		Cost for 40 sqm = a+b+c+d				2285.81	
		Rate per sqm = (a+b+c+d)/40				57.15	
					say	57.15	
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	250.00	7.50	L-12
		Painter	day	0.450	300.00	135.00	L-18
		Mazdoor	day	0.250	200.00	50.00	L-13
		b) Material					
		Paint ready mixed approved brand.	Litre	1.250	180.00	225.00	M-131
		Add @ 1 per cent on cost of material for scaffolding				2.25	
		Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				20.88	
		c) Overhead charges @ 10 % on (a+b)				44.06	
		d) Contractor's profit @ 10 % on (a+b+c)				48.47	
		Cost for 10 sqm = a+b+c+d				533.16	
		Rate per sqm= (a+b+c+d)/10				53.32	
					say	53.30	
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	250.00	7.50	L-12
		Painter	day	0.500	300.00	150.00	L-18
		Mazdoor	day	0.200	200.00	40.00	L-13
		b) Material					
		Paint ready mixed of approved brand.	Litre	1.500	180.00	270.00	M-131
		Add @ 1 per cent on cost of material for scaffolding				2.70	
		Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				23.38	
		c) Overhead charges @ 10 % on (a+b)				49.36	
		d) Contractor's profit @ 10 % on (a+b+c)				54.29	
		Cost for 10 sqm = a+b+c+d				597.23	
		Rate per sqm = (a+b+c+d)/10				59.72	
					say	59.70	
8.11	803	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work					
		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.					
		(i) Over 10 cm in width					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.090	250.00	22.50	L-12
		Painter	day	0.550	300.00	165.00	L-18
		Mazdoor	day	1.550	200.00	310.00	L-13
		b) Material					
		Road marking Paint as per IS :164	Litre	1.480	160.00	236.80	M-132
		c) Overhead charges @ 10 % on (a+b)				73.43	
		d) Contractor's profit @ 10 % on (a+b+c)				80.77	
		Cost for 10 sqm = a+b+c+d				888.50	
		Rate per sqm= (a+b+c+d)/10				88.85	
					say	88.85	

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.11		(ii) Up to 10 cm in width					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.070	250.00	17.50	L-12
		Painter	day	0.350	300.00	105.00	L-18
		Mazdoor	day	1.350	200.00	270.00	L-13
		b) Material					
		Road marking paint	Litre	1.480	160.00	236.80	M-132
		c) Overhead charges @ 10 % on (a+b)				62.93	
		d) Contractor's profit @ 10 % on (a+b+c)				69.22	
		Cost for 10 sqm = a+b+c+d				761.45	
		Rate per sqm = (a+b+c+d)/10				76.15	
					<i>say</i>	<u>76.15</u>	
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					
		(i) Over 10 cm in width					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.060	250.00	15.00	L-12
		Painter 1st class	day	0.300	300.00	90.00	L-18
		Mazdoor	day	1.250	200.00	250.00	L-13
		b) Material					
		Road marking paint	Litre	0.900	160.00	144.00	M-132
		c) Overhead charges @ 10 % on (a+b)				49.90	
		d) Contractor's profit @ 10 % on (a+b+c)				54.89	
		Cost for 10 sqm = a+b+c+d				603.79	
		Rate per sqm = (a+b+c+d)/10				60.38	
					<i>say</i>	<u>60.40</u>	
8.12		(ii) Up to 10 cm in width					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.070	250.00	17.50	L-12
		Painter 1st class	day	0.350	300.00	105.00	L-18
		Mazdoor	day	1.350	200.00	270.00	L-13
		b) Material					
		Road marking Paint	Litre	0.900	160.00	144.00	M-132
		c) Overhead charges @ 10 % on (a+b)				53.65	
		d) Contractor's profit @ 10 % on (a+b+c)				59.02	
		Cost for 10 sqm = a+b+c+d				649.17	
		Rate per sqm = (a+b+c+d)/10				64.92	
					<i>say</i>	<u>64.90</u>	
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 a					
		<i>Unit = sqm</i>					
		<i>Taking output = 600 sqm</i>					
		a) Labour					
		Mate	day	0.030	250.00	7.50	L-12
		Mazdoor	day	0.750	200.00	150.00	L-13
		b) Machinery					
		Road marking machine @ 60 sqm per hour	hour	10.000	92.00	920.00	P&M-043
		Tractor-trolley	hour	0.500	388.00	194.00	P&M-053
		c) Material					
		Hot applied thermoplastic compound	Litre	1500.000	100.00	150000.00	M-118
		Reflectorising glass beads	kg	150.000	80.00	12000.00	M-152
		d) Overhead charges @ 10 % on (a+b+c)				16327.15	
		e) Contractor's profit @ 10 % on (a+b+c+d)				17959.87	
		Cost for 600 sqm = a+b+c+d+e				197558.52	
		Rate per sqm = a+b+c+d+e)/600				329.26	
					<i>say</i>	<u>329.25</u>	

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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)					
		<i>Unit = Nos.</i>					
		<i>Taking output = 6 Nos.</i>					
		a) M-15 grade of concrete	cum	2.350	5055.20	11879.72	Item 12.8 (A)
		b) Steel reinforcement @ 5 kg per sqm	kg	22.080	56.15	1239.71	Item 13.6 /1000
		c) Excavation in soil for foundation	cum	1.680	203.30	341.54	Item No. 3.13
		d) Painting two coats on concrete surface	sqm	9.850	56.90	560.47	Item 8.8
		e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	0.45	810.00	Item 8.3
		Transportation and fixing					
		f) Labour					
		Mate	day	0.260	250.00	65.00	L-12
		Mason	day	0.600	300.00	180.00	L-11
		Mazdoor including loading/unloading	day	6.000	200.00	1200.00	L-13
		g) Machinery					
		Tractor-trolley	hour	6.000	388.00	2328.00	P&M-053
		h) Overhead charges @ 10 % on (f+g)				377.30	
		i) Contractor's profit @ 10 % on (f+g+h)				415.03	
		Cost for 6 Nos. 5th km stone = a+b+c+ d+e +f+g+h +i				19396.76	
		Rate for each 5th km stone = (a+b+c+ d+e +f+g+h +i) /6				3232.79	
						<i>say</i> <u>3217.80</u>	
8.14	(ii)	Ordinary kilometer stone (precast)					
		<i>Unit = Nos.</i>					
		<i>Taking output = 14 Nos.</i>					
		a) M-15 grade of concrete	cum	3.770	5055.20	19058.10	Item 12.8 (A)
		b) Steel reinforcement @ 5 kg per sqm	kg	26.320	56.15	1477.77	Item 13.6 /1000
		c) Excavation in soil for foundation	cum	2.770	203.30	563.14	Item No. 3.13
		d) Painting two coats on concrete surface	sqm	11.410	56.90	649.23	Item 8.8
		e) Lettering on km post (average 12 letters of 10 cm height each)	per cm per letter	1680.000	0.45	756.00	Item 8.3
		Transportation and fixing					
		f) Labour					
		Mate	day	0.320	250.00	80.00	L-12
		Mason	day	1.000	300.00	300.00	L-11
		Mazdoor	day	7.000	200.00	1400.00	L-13
		g) Machinery					
		Tractor-trolley	hour	6.000	388.00	2328.00	P&M-053
		h) Overhead charges @ 10 % on (f+g)				410.80	
		i) Contractor's profit @ 10 % on (f+g+h)				451.88	
		Cost for 14 Nos. ordinary km stone = (a+b+ c +d+e+f+g+h+i)				27474.92	
		Rate for each ordinary km stone = (a+b+ c +d+e+f+g+h+i) /14				1962.49	
						<i>say</i> <u>1956.45</u>	
8.14	(iii)	Hectometer stone (precast)					
		<i>Unit = Nos.</i>					
		<i>Taking output = 33 Nos.</i>					
		a) M-15 grade of concrete	cum	1.580	5055.20	7987.22	Item 12.8 (A)
		b) Steel reinforcement @ 5 kg per sqm	kg	66.000	56.15	3705.64	Item 13.6 /1000
		c) Excavation in soil for foundation	cum	1.390	203.30	282.59	Item No. 3.13
		d) Painting two coats on concrete surface	sqm	6.270	56.90	356.76	Item 8.8
		e) Lettering on km post (average 1 letter of 10 cm height each)	per cm per letter	330.000	0.45	148.50	Item 8.3
		Transportation and fixing					
		f) Labour					
		Mate	day	0.340	250.00	85.00	L-12
		Mason	day	1.500	300.00	450.00	L-11
		Mazdoor	day	7.000	200.00	1400.00	L-13
		g) Machinery					
		Tractor-trolley	hour	6.000	388.00	2328.00	P&M-053

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		h) Overhead charges @ 10 % on (f+g)				426.30	
		i) Contractor's profit @ 10 % on (f+g+h)				468.93	
		Cost for 33 Nos. Hectometer stone = (a+b+c+d+e+f+g+h+i)				17638.94	
		Rate for each Hectometer stone = (a+b+c+d+e+f+g+h+i)/33				534.51	
					say	535.00	
		Note					The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective chapters.
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					
		Unit = Each					
		Taking output = 57 Nos.					
		a) M-15 grade of the boundary stone	cum	1.250	5055.20	6319.00	Item 12.8 (A)
		b) Steel reinforcement	kg	79.800	56.15	4480.46	Item 13.6 /1000
		c) Excavation in soil	cum	10.720	203.30	2179.38	Item No. 3.13
		d) Lettering, each 10 cm high	per letter per cm high	2280.000	0.45	1026.00	Item 8.3
		Transportation and fixing					
		e) Labour					
		Mate	day	0.570	250.00	142.50	L-12
		Mazdoor	day	14.250	200.00	2850.00	L-13
		f) Machinery					
		Tractor-trolley	hour	6.000	388.00	2328.00	P&M-053
		g) Material					
		Stone spall	cum	11.970	400.00	4788.00	M-008
		h) Overhead charges @ 10 % on (e+f+g)				1010.85	
		i) Contractor's profit @ 10 % on (e+f+g+h)				1111.94	
		Cost for 57 Nos. boundary pillar = (a+b+c+d+e+f+g+h+i)				26236.12	
		Rate for each boundary pillar = (a+b+c+d+e+f+g+h+i)/57				460.28	
					say	458.20	
		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					
		Unit = per running metre					
		Taking output = 30 metres					
		a) Labour					
		Mate	day	0.090	250.00	22.50	L-12
		Blacksmith	day	0.250	300.00	75.00	L-02
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Material					
		Barbed wire 335 metres length @ 9.38 kg per 100 metres	kg	31.420	42.00	1319.64	M-063
		MS angle iron 40 mm x 40mm x 6 mm, 23 metres in length @ 3.5 kg per metre	kg	80.500	45.22	3640.13	M-179 /1000
		Add for GI staple binding wire, drilling holes etc. @ 2 per cent of the cost of material				99.20	
		c) Painting					
		Applying two coats of painting on exposed surface of angle iron posts (Rate as per item no. 8.9)	sqm	2.110	53.30	112.46	Item 8.9
		d) Overhead charges @ 10 % on (a+b)				555.65	
		e) Contractor's profit @ 10 % on (a+b+d)				611.21	
		Cost for 30 metres fencing = a+b+c+d+e				6835.79	
		Rate per metre = (a+b+c+d+e)/30				227.86	
					say	227.85	
		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					
		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					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Unit = per running metre</i>					
		Taking output = 30 metres					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Blacksmith	day	0.400	300.00	120.00	L-02
		Mazdoor	day	2.500	200.00	500.00	L-13
		b) Material					
		Barbed wire 428 metres length @ 9.38 kg per 100 metres	kg	40.150	42.00	1686.30	M-063
		MS angle iron 50 mm x 50 mm x 6 mm, 33.8 metres in length @ 4.5 kg per metre	kg	152.000	45.22	6873.29	M-179 /1000
		Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material				171.19	
		c) Painting					
		Applying two coats of painting on exposed surface of angle iron posts	sqm	3.960	53.30	211.07	Item 8.9
		d) Overhead charges @ 10 % on (a+b)				938.08	
		e) Contractor's profit @ 10 % on (a+b+d)				1031.89	
		Cost for 30 metres fencing = a+b+c+d+e				11561.81	
		Rate per metre fencing = (a+b+c+d+e)/30				385.39	
					<i>say</i>	<u>385.35</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					
		<i>Unit = Running metre</i>					
		Taking output = 30 m					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Welder	day	1.000	300.00	300.00	L-02
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Material					
		i) Angle iron for posts 50 x 50 x 6 mm	kg	106.000	45.22	4793.21	M-179 /1000
		ii) Runner flat 50 x 5 mm	kg	26.000	45.22	1175.69	M-179 /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	40.00	6040.00	M-191
		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					
		c) Machinery					
		Tractor-trolley	hour	0.100	388.00	38.80	P&M-053
		d) Painting					
		Painting two coats including priming	sqm	8.000	53.30	426.40	Item 8.9
		e) Overhead charges @ 10 % on (a+b+c)				1277.77	
		f) Contractor's profit @ 10 % on (a+b+c+e)				1405.55	
		Cost for 30 metre = a+b+c+d+e+f				15887.43	
		Rate per metre = (a+b+c+d+e+f)/30				529.58	
					<i>say</i>	<u>529.50</u>	
		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					
		<i>Unit = Running metre</i>					
		Taking output = 10metres					
		i) Excavation for foundation (6 Nos) 6 x 0.6 x 0.6 x 0.6	cum	1.296	203.30	263.48	Item No. 3.13
		ii) Foundation concrete M-15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	5055.20	3275.77	Item 12.8 (A)
		iii) Painting of pipe	sqm	4.710	53.30	251.04	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	53.30	115.13	Item 8.9
		a) Labour (For fixing at site)					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mate	day	0.010	250.00	2.50	L-12
		Mazdoor	day	0.250	200.00	50.00	L-13
		Plumber	day	0.010	300.00	3.00	L-02
		b) Material					
		Steel pipe 50 mm external dia as per IS:1239	metre	30.000	350.00	10500.00	M-175
		Medium weight steel channel (ISMC series) 100 mm x 50 mm, 10.8 metres length @ 9.2 kg per metre	kg	99.360	45.22	4492.96	M-179 /1000
		Add for drilling holes @ 2 per cent of cost of channels				89.86	
		c) Machinery					
		Tractor-trolley	hour	0.040	388.00	15.52	P&M-053
		d) Overhead charges @ 10 % on (a+b+c)				1904.37	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2094.81	
		Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e				23058.44	
		Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10				2305.84	
						say <u>2305.55</u>	
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 posts 1.8 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	203.30	263.48	Item No. 3.13
		ii) Foundation concrete M - 15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	5055.20	3275.77	Item 12.8 (A)
		iii) RCC M - 20 for pre cast posts 6 nos of 1.8 metres each	cum	0.320	6670.40	2134.53	Item 14.1(A)
		iv) Painting of pipe	sqm	4.710	53.30	251.04	Item 8.9
		a) Labour					
		Mate	day	0.014	250.00	3.50	L-12
		Mazdoor	day	0.350	200.00	70.00	L-13
		Plumber	day	0.010	300.00	3.00	L-02
		b) Material					
		Steel pipe 50 mm dia as per IS:1239	metre	30.000	350.00	10500.00	M-175
		c) Machinery					
		Tractor-trolley	hour	0.250	388.00	97.00	P&M-053
		d) Overhead charges @ 10 % on (a+b+c)				1067.35	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1174.09	
		Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e				18839.75	
		Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10				1883.98	
						say <u>1883.75</u>	
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 expa					
		Unit = Linear metre					
		Taking output = 10 m					
		(i) a) M 20 grade concrete					
		M 20 grade concrete	cum	3.000	6670.40	20011.20	Item 14.1(A)
		b) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		c) Material					
		HYSD steel reinforcement including dowel bars	tonne	0.280	38219.00	10701.32	M-082
		Pre-moulded asphalt filler board	sqm	0.320	55.00	17.60	M-144
		d) Overhead charges @ 10 % on (b+c)				1092.89	
		e) Contractor's profit @ 10 % on (b+c+d)				1202.18	
		Cost for 10 metre = a+b+c+d+e				33235.19	
		Rate per metre = (a+b+c+d+e)/10				3323.52	
						say <u>3323.40</u>	
		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					
		Unit = Running metre					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Taking output = 4.5 metre length					
		a) Labour					
		Mate	day	0.060	250.00	15.00	L-12
		Blacksmith	day	0.500	300.00	150.00	L-02
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	388.00	38.80	P&M-053
		c) Material					
		Corrugated sheet,3 mm thick, "W" beam section railing,4.5 m in length	kg	41.210	45.22	1863.47	M-179 /1000
		Channel post 150 x 75 x 5 mm,1.8 m long,3 Nos @ 16.4 kg per metre	kg	88.560	45.22	4004.59	M-179 /1000
		Spacer 150 x 75 x 5 mm channel 0.33 m long,3 Nos @ 16.4 kg per metre	kg	16.240	45.22	734.36	M-179 /1000
		Nuts and bolts	kg	20.000	50.00	1000.00	M-130
		Add 25 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				1900.61	
		d) Overhead charges @ 10 % on (a+b+c)				990.68	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1089.75	
		Cost for 4.5 metre = a+b+c+d+e				11987.27	
		Rate per metre = (a+b+c+d+e)/4.5				2663.84	
					say	<u>2663.85</u>	
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					
		Unit = Running metre					
		Taking output = 4.5 metre length					
		a) Labour					
		Mate	day	0.060	250.00	15.00	L-12
		Blacksmith	day	0.500	300.00	150.00	L-02
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	388.00	38.80	P&M-053
		c) Material					
		Corrugated sheet,3 mm thick, "Thrie" beam section railing,4.5 m in length	kg	72.940	55.00	4011.70	M-088
		Channel post 150 x 75 x 5 mm, 2 m long,3 Nos @ 16.4 kg per metre	kg	98.400	45.22	4449.55	M-179 /1000
		Spacer 150 x 75 x 5 mm channel 0.546 m long,3 Nos	kg	26.860	45.22	1214.58	M-179 /1000
		Nuts and bolts	kg	30.000	50.00	1500.00	M-130
		Add 15 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				1676.37	
		d) Overhead charges @ 10 % on (a+b+c)				1325.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1458.16	
		Cost for 4.5 metre = a+b+c+d+e				16039.77	
		Rate per metre= (a+b+c+d+e)/4.5				3564.39	
					say	<u>3564.40</u>	
		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 dependi
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 drawin
8.25	Suggestive	Flexible Crash Barrier, Wire Rope Safety Barrier					
		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					
		Unit = Running metre					
		Taking output = 15 metre					
		a) Labour					
		Mate	day	0.120	250.00	30.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		Blacksmith	day	1.000	300.00	300.00	L-02
		b) Material					
		i) RS Joist 100 x 75 mm - 16.5 m @ 11.5 kg per metre	kg	190.000	45.22	8591.61	M-179 /1000
		ii) Struts - 2 Nos. for terminal posts,2 m long each 2 x 2 x 11.50	kg	46.000	45.22	2080.07	M-179 /1000

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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	45.22	8519.26	M-179 /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	201.15	13074.75	M-177
		Add 5 per cent of cost of material for drilling, gripping, fixing, fabrication and welding consumables				1613.28	
		c) Painting					
		Applying 2 coats of painting on exposed surface	sqm	16.500	53.30	879.45	Item 8.9
		d) Machinery					
		Tractor-trolley	hour	0.250	388.00	97.00	P&M-053
		e) Overhead charges @ 10 % on (a+b+d)				3470.60	
		f) Contractor's profit @ 10 % on (a+b+d+e)				3817.66	
		Cost for 15 m = a+b+c+d+e+f				42873.68	
		Rate per m = (a+b+c+d+e+f)/15				2858.25	
					say	2857.90	
		Note					The items of excavations and cement concrete works will be measured and included separately as per the approved designs and drawings.
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					
		Unit = Each					
		Taking output = one light					
		a) Labour					
		Mate	day	0.030	250.00	7.50	L-12
		Mazdoor	day	0.500	200.00	100.00	L-13
		Electrician	day	0.250	300.00	75.00	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	8250.00	8250.00	M-171
		ii) Sodium vapour lamp	each	1.000	1650.00	1650.00	M-168
		Add 5 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				495.00	
		c) Painting					
		For Fixing in Median					
		Providing two coats of aluminium paint over steel circular hollow pipe with overhang on both sides	sqm	5.750	53.30	306.48	Item 8.9
		For fixing in Footpath					
		Providing two coats of aluminium paint over steel circular hollow pipe with overhang on one side	sqm	4.630	53.30	246.78	Item 8.9
		(i) For Fixing in Median					
		d) Overhead charges @ 10 % on (a+b)				1057.75	
		e) Contractor's profit @ 10 % on (a+b+d)				1163.53	
		Rate per light for fixing in Median= a+b+c+d+e				13105.25	
					say	13103.55	
		(ii) For fixing in Footpath					
		Rate per light for Fixing in Footpath = a+b+c+d+e				13045.55	
					say	13044.15	
		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	250.00	5.00	L-12
		Mazdoor	day	0.400	200.00	80.00	L-13
		Electrician	day	0.200	300.00	60.00	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	5000.00	5000.00	M-170
		ii) Sodium vapour lamp 70 watt	each	1.000	1650.00	1650.00	M-168
		Add 1 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				66.50	
		c) Painting					
		Providing two coats of aluminium paint over steel circular hollow pipe	sqm	2.760	53.30	147.11	Item 8.9
		d) Overhead charges @ 10 % on (a+b)				686.15	
		e) Contractor's profit @ 10 % on (a+b+d)				754.77	

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Rate per light = a+b+c+d+e				8449.52	
					say	<u>8448.70</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					
		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					
	(i)	Single row for one utility service					
		<i>Unit = Running metre</i>					
		Taking output = 20metres					
		a) Random Rubble masonry/Brick masonry in cement mortar 1:6 for head wall both side	cum	2.360	3740.20	8826.87	Item 12.7 (Addl) B
		b) Labour					
		Mate	day	0.050	250.00	12.50	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		Mazdoor skilled	day	0.250	300.00	75.00	L-15
		c) Material					
		Reinforced Cement Concrete pipe 300 mm dia	metre	20.000	385.00	7700.00	M-151
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 20 m)	cum	7.200	340.00	2448.00	M-009
		Collar for joints 300 mm dia	each	9.000	115.00	1035.00	M-083
		Cement mortar 1:2 for joints	cum	0.020	6014.00	120.28	Item 12.6 (B)
		d) Machinery					
		Tractor-trolley	hour	0.500	388.00	194.00	P&M-053
		e) Overhead charges @ 10 % on (b+c+d)				1178.48	
		f) Contractor's profit @ 10 % on (b+c+d+e)				1296.33	
		Cost for 20 metre = a+b+c+d+e+f				23086.46	
		Rate per metre = (a+b+c+d+e+f)/20				1154.32	
					say	<u>1154.30</u>	
8.29	(ii)	Double row for two utility services					
		<i>Unit = Running metre</i>					
		Taking output = 20metres					
		a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides.	cum	3.370	3740.20	12604.47	Item 12.7 (Addl) B
		b) Labour					
		Mate	day	0.050	250.00	12.50	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		Mazdoor skilled	day	0.250	300.00	75.00	L-15
		c) Material					
		Reinforced Cement Concrete pipe 300 mm dia	metre	40.000	385.00	15400.00	M-151
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 40 m)	cum	14.400	340.00	4896.00	M-009
		Collar for joints 300 mm dia	each	18.000	115.00	2070.00	M-083
		Cement mortar 1:2 for joints	cum	0.040	6014.00	240.56	Item 12.6 (B)
		d) Machinery					
		Tractor-trolley	hour	1.000	388.00	388.00	P&M-053
		e) Overhead charges @ 10 % on (b+c+d)				2348.21	
		f) Contractor's profit @ 10 % on (b+c+d+e)				2583.03	
		Cost for 20 metre = a+b+c+d+e+f				41017.77	
		Rate per metre = (a+b+c+d+e+f)/20				2050.89	
					say	<u>2050.85</u>	
8.29	(iii)	Triple rRow for three utility services					
		<i>Unit = Running metre</i>					
		Taking output = 20metres					
		a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides.	cum	4.380	3740.20	16382.08	Item 12.7 (Addl) B
		b) Labour					
		Mate	day	0.160	250.00	40.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		Mazdoor skilled	day	1.000	300.00	300.00	L-15
		c) Material					
		Reinforced Cement Concrete pipe 300 mm dia	metre	60.000	385.00	23100.00	M-151
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 60 m)	cum	21.600	340.00	7344.00	M-009
		Collar for joints 300 mm dia	each	27.000	115.00	3105.00	M-083
		Cement mortar 1:2 for joints	cum	0.060	6014.00	360.84	Item 12.6 (B)
		d) Machinery					
		Tractor-trolley	hour	1.500	388.00	582.00	P&M-053
		e) Overhead charges @ 10 % on (b+c+d)				3543.18	
		f) Contractor's profit @ 10 % on (b+c+d+e)				3897.50	

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cost for 20 metre = a+b+c+d+e+f				59254.60	
		Rate per metre = (a+b+c+d+e+f)/20				2962.73	
					say	<u>2962.70</u>	
	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.					
8.35	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 sui					
		<i>Unit = Nos</i>					
		Taking output = 50Nos					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Material					
		Aluminium studs 100 x 100 mm fitted with lense reflectors	each	50.000	440.00	22000.00	M-062
		Add 10 per cent of cost of material for fixing and installation				2200.00	
		c) Overhead charges @ 10 % on (a+b)				2441.00	
		d) Contractor's profit @ 10 % on (a+b+c)				2685.10	
		Cost for 50 studs = a+b+c+d				29536.10	
		Rate per studs = (a+b+c+d)/50				590.72	
					say	<u>590.70</u>	
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					
		<i>Unit = Running metre</i>					
		Taking output = 68 Nos.					
		a) Labour					
		Mate	day	0.020	250.00	5.00	L-12
		Mazdoor	day	0.500	200.00	100.00	L-13
		b) Material					
		Traffic cones with 150 mm reflective sleeve	each	68.000	1200.00	81600.00	M-186
		c) Machinery					
		Tractor-trolley	hour	0.100	388.00	38.80	P&M-053
		d) Overhead charges @ 10 % on (a+b+c)				8174.38	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8991.82	
		Cost for 68 Nos. = a+b+c+d+e				98910.00	
		Rate per metre = (a+b+c+d+e)/68				1454.56	
					say	<u>1454.55</u>	
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.					
		<i>Unit = sqm</i>					
		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					
8.40	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					
		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 b					
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 wid					
		<i>Unit = each</i>					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Taking output = one steel portable barricade					
		a) Labour					
		Mate	day	0.020	250.00	5.00	L-12
		Mazdoor	day	0.250	200.00	50.00	L-13
		Painter	day	0.500	300.00	150.00	L-18
		Welder	day	0.250	300.00	75.00	L-02
		b) Material					
		Angle iron 45 x 45 x 5 mm	kg	25.000	45.22	1130.48	M-179 /1000
		MS sheet 300 mm wide,2.5 m long and 2.6 mm thick	kg	15.000	45.22	678.29	M-179 /1000
		Paint	litre	0.500	180.00	90.00	M-131
		Add 2 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				36.18	
		c) Overhead charges @ 10 % on (a+b)				221.49	
		d) Contractor's profit @ 10 % on (a+b+c)				243.64	
		Rate per barricade = a+b+c+d				2680.07	
					say	<u>2680.05</u>	
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 a					
		Unit = each					
		Taking output = one barricade					
		a) Labour					
		Mate	day	0.050	250.00	12.50	L-12
		Mazdoor	day	0.300	200.00	60.00	L-13
		Painter	day	0.600	300.00	180.00	L-18
		Welder	day	0.300	300.00	90.00	L-02
		b) Material					
		Angle iron 50 x 50 x 5 mm,2 m long,2 Nos.	kg	15.000	45.22	678.29	M-179 /1000
		MS sheet of 12 SWG,3 Nos of 200 mm width and 4 m length	kg	50.000	45.22	2260.95	M-179 /1000
		Paint	litre	1.000	180.00	180.00	M-131
		Add 1 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				58.78	
		c) Overhead charges @ 10 % on (a+b)				352.05	
		d) Contractor's profit @ 10 % on (a+b+c)				387.26	
		Rate per barricade = a+b+c+d				4259.83	
					say	<u>4259.85</u>	
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					
		Unit = each					
		Taking output = one barricade					
		a) Labour					
		Mate	day	0.050	250.00	12.50	L-12
		Mazdoor	day	0.300	200.00	60.00	L-13
		Painter	day	0.600	300.00	180.00	L-18
		Carpenter	day	0.600	300.00	180.00	L-04
		b) Material					
		Timber	cum	0.180	14000.00	2520.00	M-185
		Add 1 per cent of cost of timber for nuts & bolts, nails, etc.				25.20	
		c) Overhead charges @ 10 % on (a+b)				297.77	
		d) Contractor's profit @ 10 % on (a+b+c)				327.55	
		Rate per barricade = a+b+c+d				3603.02	
					say	<u>3603.00</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	250.00	60.00	L-12
		Mazdoor	day	3.000	200.00	600.00	L-13
		Painter	day	1.000	300.00	300.00	L-18
		Mason	day	2.000	300.00	600.00	L-11
		b) Material					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Brick	each	1800.000	6.50	11700.00	M-079
		Cement	kg	22.000	7.99	175.76	M-081 /1000
		Sand	cum	0.090	490.00	44.10	M-005
		Paint	litre	1.250	180.00	225.00	M-131
		c) Overhead charges @ 10 % on (a+b)				1370.49	
		d) Contractor's profit @ 10 % on (a+b+c)				1507.53	
		Rate per barricade = a+b+c+d				16582.88	
					say	<u>16582.90</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:					
		<i>Unit = each</i>					
		Taking output = one drum delineator					
		a) Labour					
		Mate	day	0.020	250.00	5.00	L-12
		Mazdoor	day	0.250	200.00	50.00	L-13
		Painter	day	0.250	300.00	75.00	L-18
		b) Material					
		Steel drum 300 mm dia 1.2 m high/empty bitumen drum	each	1.000	55.00	55.00	M-172
		Paint	litre	0.500	180.00	90.00	M-131
		c) Overhead charges @ 10 % on (a+b)				27.50	
		d) Contractor's profit @ 10 % on (a+b+c)				30.25	
		Rate per drum delineator = a+b+c+d				332.75	
					say	<u>332.75</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					
		<i>Unit = each</i>					
		Taking output = one flagman					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Material					
		Flag of red color cloth 600 x 600 mm	each	1.000	55.00	55.00	M-099
		Wooden staff for fastening of flag 25 mm dia, one m long	each	1.000	55.00	55.00	M-196
		c) Overhead charges @ 10 % on (a+b)				32.00	
		d) Contractor's profit @ 10 % on (a+b+c)				35.20	
		Rate per flagman = a+b+c+d				387.20	
					say	<u>387.20</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.					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Labour					
		Mate	day	0.640	250.00	160.00	L-12
		Mason	day	1.000	300.00	300.00	L-11
		Mazdoor	day	15.000	200.00	3000.00	L-13
		b) Material					
		40mm Aggregate at site	cum	13.800	594.00	8197.20	M-055
		Sand at site	cum	6.900	490.00	3381.00	M-005
		Cement at site	tonne	3.300	7989.00	26363.70	M-081
		Cost of water	KL	18.000	55.00	990.00	M-189
		c) Machinery					
		Concrete mixer 0.4/ 0.28 cum	hour	6.000	220.00	1320.00	P&M-009
		Generator set 33 KVA	hour	6.000	370.00	2220.00	P&M-079
		Water tanker 6 KL capacity	hour	3.000	444.00	1332.00	P&M-060
		d) Overhead charges @ 10 % on (a+b+c)				4726.39	
		e) Contractor's profit @ 10 % on (a+b+c+d)				5199.03	
		Cost for 15 cum = a+b+c+d+e				57189.32	
		Rate per cum = (a+b+c+d+e)/15				3812.62	
					say	3812.60	
		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 NP2 / Prestressed Concrete Pipe on First Class Bedding in Single Row .					
		Laying Reinforced cement concrete pipe NP2/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 an					
		<i>Unit = metre</i>					
		<i>Taking output = 12.5 metres (5 pipes of 2.5 m length each)</i>					
		A 1000 mm dia					
		a) Labour					
		Mate	day	0.180	250.00	45.00	L-12
		Mason	day	0.500	300.00	150.00	L-11
		Mazdoor	day	4.000	200.00	800.00	L-13
		b) Material					
		Sand at site	cum	0.070	490.00	34.30	M-005
		Cement at site	tonne	0.050	7989.00	399.45	M-081
		RCC pipe NP-2/prestressed concrete pipe including collar at site	metre	12.500	775.00	9687.50	M-149
		Granular material passing 5.6 mm sieve for bedding	cum	4.500	340.00	1530.00	M-009
		c) Overhead charges @ 10 % on (a+b)				1264.63	
		d) Contractor's profit @ 10 % on (a+b+c)				1391.09	
		Cost for 12.5 metres = a+b+c+d				15301.96	
		Rate per metre = (a+b+c+d)/12.5				1224.16	
					say	1224.15	
		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 respec

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	250.00	70.00	L-12
			Mason	day	1.000	300.00	300.00	L-11
			Mazdoor	day	6.000	200.00	1200.00	L-13
			b) Material					
			Sand at site	cum	0.090	490.00	44.10	M-005
			Cement at site	tonne	0.070	7989.00	559.23	M-081
			RCC pipe NP-2/prestressed concrete pipe including collar at site	metre	12.500	1050.00	13125.00	M-150
			Granular material passing 5-6 mm sieve for class bedding	cum	5.000	340.00	1700.00	M-009
			c) Overhead charges @ 10 % on (a+b)				1699.83	
			d) Contractor's profit @ 10 % on (a+b+c)				1869.82	
			Cost for 12.5 metres = a+b+c+d				20567.98	
			Rate per metre = (a+b+c+d)/12.5				1645.44	
						say	1645.45	
		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 respec.					
9.3	2900		Laying Reinforced Cement Concrete Pipe NP2 / Prestressed Concrete Pipe on First Class Bedding in Double Row .					
			Laying Reinforced cement concrete pipe NP2 / 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					
			<i>Unit = metre</i>					
			<i>Taking output = 12.5 metres (10 pipes of 2.5 m length each in two rows.)</i>					
		A	1000 mm dia					
			a) Labour					
			Mate	day	0.360	250.00	90.00	L-12
			Mason	day	1.000	300.00	300.00	L-11
			Mazdoor	day	8.000	200.00	1600.00	L-13
			b) Material					
			Sand at site	cum	0.140	490.00	68.60	M-005
			Cement at site	tonne	0.100	7989.00	798.90	M-081
			RCC pipe NP-2/prestressed concrete pipe including collar at site	metre	25.000	775.00	19375.00	M-149
			Granular material passing 5.6 mm sieve for bedding	cum	12.500	340.00	4250.00	M-009
			c) Overhead charges @ 10 % on (a+b)				2648.25	
			d) Contractor's profit @ 10 % on (a+b+c)				2913.08	
			Cost for 12.5 metres = a+b+c+d				32043.83	
			Rate per metre = (a+b+c+d)/12.5				2563.51	
		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	2563.50	
			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 respec.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
9.3		B	1200 mm dia					
			a) Labour					
			Mate	day	0.560	250.00	140.00	L-12
			Mason	day	2.000	300.00	600.00	L-11
			Mazdoor	day	12.000	200.00	2400.00	L-13
			b) Material					
			Sand at site	cum	0.180	490.00	88.20	M-005
			Cement at site	tonne	0.140	7989.00	1118.46	M-081
			RCC pipe NP-2 /prestressed concrete pipe including collar at site	metre	25.000	1050.00	26250.00	M-150
			Granular material passing 5-6 mm sieve for class bedding	cum	13.750	340.00	4675.00	M-009
			c) Overhead charges @ 10 % on (a+b)				3527.17	
			d) Contractor's profit @ 10 % on (a+b+c)				3879.88	
			Cost for 12.5 metres = a+b+c+d				42678.71	
			Rate per metre= (a+b+c+d)/12.5				3414.30	
		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>3414.30</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 respec					

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					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.130	1428.00	185.64	P&M-026
		Tipper (L is average lead in km for borrow earth)	tonne.km	12 x L	22.00	792.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of carriage towards loading and unloading charges.				79.20	
		Plate compactor	hour	0.500	275.00	137.50	P&M-086
		c) Overhead charges @ 10 % on (a+b)				161.43	
		d) Contractor's profit @ 10 % on (a+b+c)				177.58	
		Cost for 10 cum = a+b+c+d				1953.35	
		Rate per cum = (a+b+c+d)/10				195.34	
						<i>say</i>	195.35
		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 there in 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.					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
		Assuming average thickness of filling to be 150 mm					
		Quantity of fresh material = 15 cum					
		a) Labour					
		Mate	day	0.180	250.00	45.00	L-12
		Mazdoor	day	4.500	200.00	900.00	L-13
		b) Machinery					
		Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.250	1428.00	357.00	P&M-026
		Tipper (L is average lead in km for borrow earth)	tonne.km	24xL	22.00	1584.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of transportation to cover cost of loading and unloading				158.40	
		Plate compactor @ 25 sqm per hour	hour	12.000	275.00	3300.00	P&M-086
		c) Overhead charges @ 10 % on (a+b)				634.44	
		d) Contractor's profit @ 10 % on (a+b+c)				697.88	
		Cost for 100 sqm = a+b+c+d				7676.72	
		Rate per sqm = (a+b+c+d)/100				76.77	
						<i>say</i>	76.75
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
		Assuming average depth of stripping as 75 mm					
		Quantity of earth cutting involved = 7.5 cum					
		a) Labour					
		Mate	day	0.100	250.00	25.00	L-12
		Mazdoor	day	2.500	200.00	500.00	L-13
		b) Machinery					
		Plate compactor @ 25 sqm per hour	hour	4.000	275.00	1100.00	P&M-086
		c) Overhead charges @ 10 % on (a+b)				162.50	
		d) Contractor's profit @ 10 % on (a+b+c)				178.75	
		Cost for 100 sqm = a+b+c+d				1966.25	
		Rate per sqm on = (a+b+c+d)/100				19.66	
						<i>say</i>	19.65
		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 p					
		<i>Unit = Sqm</i>					
		<i>Taking out put = 10250 sqm (205 cum)/(405 tonne)</i>					
		a) Labour					
		Mate	Day	3.760	250.00	940.00	L-12

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	Day	90.000	200.00	18000.00	L-13
		Mazdoor skilled	Day	4.000	300.00	1200.00	L-15
		b) Machinery					
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		HMP 100-110 TPH Capacity	hour	6.000	23254.00	139524.00	P&M-021
		Tipper 10 tonnes capacity	hour	45.000	554.00	24930.00	P&M-048
		Smooth wheeled roller 8-10 tonnes	hour	12.000	458.00	5496.00	P&M-044
		c) Material					
		Crushed stone aggregates nominal size 13.2mm	cum	184.500	970.00	178965.00	M-052
		Crushed stone aggregates nominal size 11.2mm	cum	92.250	1500.00	138375.00	M-051
		Bitumen 80/100	tonne	14.970	36878.00	552063.66	M-075
		Bitumen emulsion for tack coat including vertical sides of pot hole.	tonne	2.460	35417.00	87125.82	M-077
		d) Overhead charges @ 10 % on (a+b+c)				114943.35	
		e) Contractor's profit @ 10 % on (a+b+c+d)				126437.68	
		Cost for 10250 sqm = a+b+c+d+e				1390814.51	
		Rate per sqm = (a+b+c+d+e)/10250				135.69	
					<i>say</i>	<u>135.70</u>	
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 p					
		<i>Unit = Sqm</i>					
		<i>Taking out put = 4900 sqm (196 cum)(450 Tonnes)</i>					
		a) Labour					
		Male	Day	2.920	250.00	730.00	L-12
		Mazdoor	Day	70.000	200.00	14000.00	L-13
		Mazdoor skilled	Day	3.000	300.00	900.00	L-15
		b) Machinery					
		Air compressor 250 cfm	hour	6.000	469.00	2814.00	P&M-001
		HMP 100-110 TPH Capacity	hour	6.000	17197.00	103182.00	P&M-022
		Tipper 10 tonnes capacity	hour	45.000	554.00	24930.00	P&M-048
		Smooth wheeled roller 8-10 tonnes	hour	12.000	458.00	5496.00	P&M-044
		c) Material					
		i) Bitumen	tonne	22.500	36878.00	829755.00	M-075
		ii) Bitumen emulsion for tack coat .	tonne	1.180	35417.00	41792.06	M-077
		iii) Aggregates					
		Grading I - 19mm(Nominal size)					
		20-10mm 35 per cent	cum	99.750	945.00	94263.75	M-051,M-052,M-053 and M-054
		10-5 mm 23 per cent	cum	65.550	550.00	36052.50	M-025
		5mm and below40 per cent	cum	114.000	640.00	72960.00	M-021,M-022 and M-024
		Add 5 per cent for wastage				10163.81	
		or					
		Grading-II 13mm (Nominal size)					
		13.2-10 mm 30 per cent	cum	85.500	1235.00	105592.50	M-051 and M-052
		10-5 mm 25 per cent	cum	71.250	550.00	39187.50	M-025
		5 mm and Below43 per cent	cum	122.550	640.00	78432.00	M-021,M-022 and M-024
		Filler 2 per cent	tonne	9.000	10500.00	94500.00	M-188
		Add 5 per cent for wastage				15885.60	
		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 @ 10 % on (a+b+c)				123703.91	
		e) Contractor's profit @ 10 % on (a+b+c+d)				136074.30	
		Cost for 4900 cum = a+b+c+d+e				1496817.34	
		Rate per cum = (a+b+c+d+e)/4900				305.47	
					<i>say</i>	<u>305.05</u>	
10.5	(ii)	for grading II Material					
		d) Overhead charges @ 10 % on (a+b+c)				135719.67	
		e) Contractor's profit @ 10 % on (a+b+c+d)				149291.63	
		Cost for 4900 cum = a+b+c+d+e				1642207.96	
		Rate per cum = (a+b+c+d+e)/4900				335.14	
					<i>say</i>	<u>335.15</u>	
		Note For detailed working of quantities of aggregates, refer item 5.8 of chapter 5					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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.					
		<i>Unit = Running Meter</i>					
		<i>Taking out put = 500m</i>					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Material					
		Slow-curing bitumen emulsion	Kg	33.000	35.00	1155.00	M-077
		Stone crusher dust	cum	0.020	460.00	9.20	M-021
		c) Overhead charges @ 10 % on (a+b)				137.42	
		d) Contractor's profit @ 10 % on (a+b+c)				151.16	
		Cost for 500sqm = a+b+c+d				1662.78	
		Rate per meter = (a+b+c+d+e)/500				3.33	
					<i>say</i>	<i>3.35</i>	
10.7	3004.4	Dusting					
		Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.					
		<i>Unit = Sqm</i>					
		<i>Taking output = 3500 sqm</i>					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Material					
		Stone crusher dust finer than 3mm with not more than 10 per cent passing 0.075 sieve.	cum	6.250	460.00	2875.00	M-021
		c) Overhead charges @ 10 % on (a+b)				329.50	
		d) Contractor's profit @ 10 % on (a+b+c)				362.45	
		Cost for 3500sqm = a+b+c+d				3986.95	
		Rate per meter = (a+b+c+d)/3500				1.14	
					<i>say</i>	<i>1.15</i>	
10.8	(A) 3004.3.2	Fog Seal					
	(B) 3004.3.4	Crack Prevention courses.					
	(C) 3004.5	Slurry Seal					
	(D) 3004.6	Surface Dressing for maintenance works.					
		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					
		<i>Unit = running metre</i>					
		<i>Taking output = 10 metres</i>					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	0.500	200.00	100.00	L-13
		Chiseller	day	0.500	250.00	125.00	L-05
		b) Material					
		Epoxy primer	kg	2.500	110.00	275.00	M-097
		Epoxy compound with accessories for preparing epoxy mortar	kg	10.000	200.00	2000.00	M-095
		c) Machinery					
		Air compressor 250 cfm for cleaning	hour	0.050	469.00	23.45	P&M-001
		d) Overhead charges @ 10 % on (a+b+c)				253.35	
		e) Contractor's profit @ 10 % on (a+b+c+d)				278.68	
		Cost for 10 metres = a+b+c+d+e				3065.47	
		Rate per metre = (a+b+c+d+e)/10				306.55	
					<i>say</i>	<i>306.55</i>	
10.10	3005.2	Repair of old Joints Sealant					
		Removal of existing sealant and re-sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material					
		<i>Unit = running metre</i>					
		<i>Taking output = 10 metres</i>					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	0.500	200.00	100.00	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Material					
		Primer	kg	0.250	155.00	38.75	M-146
		Sealant	kg	1.000	275.00	275.00	M-120
		c) Machinery					
		Air compressor 250 cfm for cleaning	hour	0.050	469.00	23.45	P&M-001
		d) Overhead charges @ 10 % on (a+b+c)				44.72	
		e) Contractor's profit @ 10 % on (a+b+c+d)				49.19	
		Cost for 10 metres = a+b+c+d+e				541.11	
		Rate per metre = (a+b+c+d+e)/10				54.11	
						<i>say</i>	<u>54.10</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					
		<i>Unit = running metre</i>					
		<i>Taking output = 10 metres</i>					
		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	250.00	20.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Overhead charges @ 10 % on (a+b)				22.00	
		c) Contractor's profit @ 10 % on (a+b)				24.20	
		Cost for 10 metres = a+b+c				266.20	
		Rate per metre = (a+b+c)/10				26.62	
						<i>say</i>	<u>26.60</u>
10.12	3000	Land Slide Clearance in soil					
		(i) 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					
		<i>Unit = cum</i>					
		<i>Taking output = 100 cum</i>					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Machinery					
		Dozer 180 HP @ 60 cum per hour	hour	1.670	3286.00	5487.62	P&M-014
		c) Overhead charges @ 10 % on (a+b)				569.76	
		d) Contractor's profit @ 10 % on (a+b+c)				626.74	
		Cost for 100 cum = a+b+c+d				6894.12	
		Rate per cum = (a+b+c+d)/100				68.94	
						<i>say</i>	<u>68.95</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 h					
		(ii) Clearance of land slides in soil and ordinary rock by a bulldozer D 50 A-15 and disposal of the same on the valley side					
		<i>Unit = cum</i>					
		<i>Taking output = 100 cum</i>					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Machinery					
		Dozer D 50 A-15	hour	1.670	2393.00	3996.31	P&M-014
		c) Overhead charges @ 10 % on (a+b)				420.63	
		d) Contractor's profit @ 10 % on (a+b+c)				462.69	
		Cost for 100 cum = a+b+c+d				5089.64	
		Rate per cum = (a+b+c+d)/100				50.90	
						<i>say</i> <u>50.90</u>	
10.13	3000	Landslide Clearance in Hard Rock Requiring Blasting					
		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 (Boll Dozer D 50)					
		<i>Unit = cum</i>					
		<i>Taking output = 100 cum</i>					
		a) Labour					
		Mate	day	0.090	250.00	22.50	L-12
		Mazdoor	day	1.500	200.00	300.00	L-13
		Driller	day	0.750	250.00	187.50	L-06
		Blaster	day	0.070	250.00	17.50	L-03
		b) Machinery					
		Dozer D 50 @ 60 cum per hour	hour	1.670	2393.00	3996.31	P&M-014
		Air compressor 250 cfm with two jack hammer	hour	2.500	469.00	1172.50	P&M-001
		c) Materials					
		Gelatine 80 per cent @ 35 kg per 100 cum	kg	17.500	135.00	2362.50	M-104
		Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	70.000	9.00	630.00	M-094 /100
		c) Overhead charges @ 10 % on (a+b)				868.88	
		d) Contractor's profit @ 10 % on (a+b+c)				955.77	
		Cost for 100 cum = a+b+c+d+e				10513.46	
		Rate per cum = (a+b+c+d+e)/100				105.13	
						<i>say</i> <u>105.15</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					
		<i>Unit = cum</i>					
		<i>Taking output = 5000 cum</i>					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor	day	2.000	200.00	400.00	L-13
		b) Machinery					
		Dozer D-50 @ 850 cum per hour	hour	5.880	2393.00	14070.84	P&M-014
		c) Overhead charges @ 10 % on (a+b)				1449.08	
		d) Contractor's profit @ 10 % on (a+b+c)				1593.99	
		Cost for 5000 cum = a+b+c+d				17533.92	
		Rate per cum = (a+b+c+d)/5000				3.51	
						<i>say</i> <u>3.50</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					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
10.15	1900	Maintenance of WBM Road					
		Maintenance of WBM road including filling up of pot holes, ruts and rectifying corrugated surface, damaged edges and ravelling as per technical specification clause 1906.					
		<i>Unit = Sqm.</i>					
		<i>Taking output = affected area @ 5% in 1 km = 1000 x 3.75 x 0.05 = 187.5 Sqm.</i>					
		<i>Quantity = 187.5 x 0.075 = 14.06 cum</i>					
		a) Rate as per item No. 4.9 A (a)	cum	14.060	974.00	13694.44	
		b) Add 50% for Extra efforts involved on maintenance to be done in small reaches				6847.22	
		Cost for 187.5 Sqm. = a+b				20541.66	
		Rate per Sqm = (a+b)/187.5				109.56	
					<i>say</i>	<u>109.55</u>	

Note : The cost of 25% retrieved material may be deducted from rates.

10.16		Maintenance of Hume Pipe					
		Maintenance of Hume Pipe Culvert by way of Cleaning, Clearing, Erosion repair, repairs to cracks, parapet wall and protection work as per drawing and technical specification Clause 1908.					
		<i>Unit = One No. Hume Pipe (1000 mm dia)</i>					
		<i>Taking output = One No. H. P. Culvert</i>					
		a) Labour					
		Mate	day	0.100	250.00	25.00	L-12
		Mazdoor (Unskilled)	day	1.000	200.00	200.00	L-13
		Mason 2nd Class	day	1.400	250.00	350.00	
		b) Material					
		Cement, Sand, Brick, Boulder etc.	L.S.			200.00	P&M-014
		c) Overhead charges @ 10 % on (a+b)				77.50	
		d) Contractor's profit @ 10 % on (a+b+c)				85.25	
		Cost for one No., Hume Pipe Culvert = a+b+c+d				937.75	
		Rate per Hume Pipe Culvert = (a+b+c+d)				937.75	
					<i>say</i>	<u>937.75</u>	

10.17		Maintenance of Culverts Slab type					
		Maintenance of Slab type Culvert by way of Cleaning, Clearing, Erosion repair, repairs to cracks, parapet wall and protection work as per drawing and technical specification Clause 1908.					
		<i>Unit = One No. Culvert (2 m span)</i>					
		<i>Taking output = One No. Slab Culvert</i>					
		a) Labour					
		Mate	day	0.200	250.00	50.00	L-12
		Mazdoor (Unskilled)	day	4.000	200.00	800.00	L-13
		Mason 2nd Class	day	1.000	250.00	250.00	
		b) Material					
		Cement, Sand, Brick, Boulder etc.	L.S.			500.00	P&M-014
		c) Overhead charges @ 10 % on (a+b)				160.00	
		d) Contractor's profit @ 10 % on (a+b+c)				176.00	
		Cost for one No., Slab Culvert = a+b+c+d				1936.00	
		Rate per Slab Culvert = (a+b+c+d)				1936.00	
					<i>say</i>	<u>1936.00</u>	

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
10.18		Maintenance of Causeway					
		Maintenance of Causeway by way of minor Surface repairs, replacing Guide Posts, repair of flood gauges, removal of debris, providing boulders and protection work and painting as per technical specifications Clause 1909.					
		<i>Unit = One metre</i>					
		<i>Taking output = 50 metre causeway</i>					
		a) Labour					
		Male	day	0.800	250.00	200.00	L-12
		Mazdoor (Unskilled)	day	1.600	200.00	320.00	L-13
		Mason 1st Class/Painter 1st Class	day	4.000	300.00	1200.00	
		b) Material					
		Cement, Sand, Brick, Boulder etc.	L.S.			350.00	P&M-014
		c) Overhead charges @ 10 % on (a+b)				207.00	
		d) Contractor's profit @ 10 % on (a+b+c)				227.70	
		Cost for 50 metre = a+b+c+d				2504.70	
		Rate per metre = (a+b+c+d)/50				50.09	
						<i>say</i>	<u>50.10</u>
10.19		Maintenance of Road signs					
		Maintenance of Road signs by way of cleaning and repainting of mandatory/regulatory/cautionary/informatory and place identifications sign board as per drawings and technical specifications Clause 1910.					
		<i>Unit = 1 km</i>					
		<i>Taking output = one km</i>					
		<i>All types of signs in one km</i>					
		a) Labour					
		Male	day	0.090	250.00	22.50	L-12
		Mazdoor (Unskilled)	day	2.000	200.00	400.00	L-13
		Painter 1st Class	day	0.125	300.00	37.50	
		b) Material					
		Cement, Sand, Brick, Boulder etc.	L.S.			300.00	P&M-014
		c) Overhead charges @ 10 % on (a+b)				76.00	
		d) Contractor's profit @ 10 % on (a+b+c)				83.60	
		Cost for one km = a+b+c+d				919.60	
		Rate per km = (a+b+c+d)				919.60	
						<i>say</i>	<u>919.60</u>
10.20	1900	Cutting of branches of trees shrubs and trimming of grass and weeds					
		(i) Cutting of branches of tress and shrubs from the road way or with in R.O.W. including disposal of wood and leaves to suitable location as per technical specification Clause 1914.					
		<i>Unit = 1 tree</i>					
		<i>Taking output = 10 trees of 900 mm average girth</i>					
		a) Labour					
		Male	day	0.120	250.00	30.00	L-12
		Mazdoor (Skilled)	day	1.000	300.00	300.00	L-15
		Mazdoor (Unskilled)	day	2.000	200.00	400.00	L-13
		b) Overhead charges @ 10 % on (a)				73.00	
		c) Contractor's profit @ 10 % on (a+b)				80.30	
		Cost for 10 trees = a+b+c				883.30	
		Rate per tree= (a+b+c)/10				88.33	
						<i>say</i>	<u>88.35</u>

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(ii) Cutting of shrubs from the road way or with in R.O.W. and disposal of shrubs to suitable location as per technical specification Clause 1914.					
		<i>Unit = Each</i>					
		<i>Taking output = 100 nos. shrubs</i>					
		a) Labour					
		Mate	day	0.080	250.00	20.00	L-12
		Mazdoor (Unskilled)	day	2.000	200.00	400.00	L-13
		b) Overhead charges @ 10 % on (a)				42.00	
		c) Contractor's profit @ 10 % on (a+b)				46.20	
		Cost for 100 shrubs = a+b+c				508.20	
		Rate per shrub= (a+b+c)/100				5.08	
					say	<u>5.10</u>	
		(iii) Trimming of grass and weeds from the shoulders/berms and disposing off the same to suitable locations as per technical specifications Clause 1914.					
		<i>Unit = Sqm.</i>					
		<i>Taking output = 1500 Sqm.</i>					
		a) Labour					
		Mate	day	0.400	250.00	100.00	L-12
		Mazdoor (Unskilled)	day	10.000	200.00	2000.00	L-13
		b) Overhead charges @ 10 % on (a)				210.00	
		c) Contractor's profit @ 10 % on (a+b)				231.00	
		Cost for 1500 sqm = a+b+c				2541.00	
		Rate per sqm = (a+b+c)/1500				1.69	
					say	<u>1.70</u>	
10.21		White washing of parapet walls of CD work and tree trunks					
		White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning scraping etc. as per technical specifications Clause 1915.					
		<i>Unit = sqm.</i>					
		<i>Taking output = 9 sqm.</i>					
		a) Labour					
		Mate	day	0.010	250.00	2.50	L-12
		Mazdoor (Unskilled)	day	0.143	200.00	28.60	L-13
		Mazdoor (White washer)	day	0.143	200.00	28.60	L-13
		b) Material					
		Lime	quintel	0.045	1050.00	47.25	
		Fevicol adhesive	kg	0.100	135.00	13.50	
		Indigo	kg	0.013	130.00	1.69	
		c) Overhead charges @ 10 % on (a+b)				10.70	
		d) Contractor's profit @ 10 % on (a+b+c)				13.28	
		Cost for 9 sqm = a+b+c+d				146.12	
		Rate per sqm = (a+b+c+d)/9				16.24	
					say	<u>16.25</u>	
		Note : For analysis of rates for maintenance works bitumen grade S-90 has been taken. User may modify as per site requirements.					

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)					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Labour					
		Mate	day	0.040	250.00	10.00	L-12
		Mazdoor	day	1.000	200.00	200.00	L-13
		b) Overhead charges @ 10 % on (a)				21.00	
		c) Contractor's profit @ 10 % on (a+b)				23.10	
		Cost for 15 cum = a+b+c				254.10	
		Rate per cum = (a+b+c)/15				16.94	
						<i>say</i>	<u>16.95</u>
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
	(i)	In rows 15 cm apart in either direction					
		a) Labour					
		Mate	day	0.170	250.00	42.50	L-12
		Mazdoor for grassing	day	0.750	200.00	150.00	L-13
		Mazdoor for maintenance for 30 days	day	1.000	200.00	200.00	L-13
		b) Machinery					
		Water tanker 6 KL capacity	hour	0.500	444.00	222.00	P&M-060
		c) Material					
		Doob grass	kg	100.000	12.00	1200.00	M-112
		d) Overhead charges @ 10 % on (a+b+c)				181.45	
		e) Contractor's profit @ 10 % on (a+b+c+d)				199.60	
		Cost for 100 sqm = a+b+c+d+e				2195.55	
		Rate per sqm = (a+b+c+d+e)/100				21.96	
						<i>say</i>	<u>21.95</u>
11.2	(ii)	In rows 7.5 cm apart in either direction					
		a) Labour					
		Mate	day	0.220	250.00	55.00	L-12
		Mazdoor for grassing	day	1.250	200.00	250.00	L-13
		for maintenance for 30 days	day	1.000	200.00	200.00	L-13
		b) Machinery					
		Water tanker 6 KL capacity	hour	0.750	444.00	333.00	P&M-060
		c) Material					
		Doob grass	kg	200.000	12.00	2400.00	M-112
		d) Overhead charges @ 10 % on (a+b+c)				323.80	
		e) Contractor's profit @ 10 % on (a+b+c+d)				356.18	
		Cost for 100 sqm = a+b+c+d+e				3917.98	
		Rate per sqm = (a+b+c+d+e)/100				39.18	
						<i>say</i>	<u>39.20</u>
		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					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
		a) Labour					
		Mate	day	0.150	250.00	37.50	L-12
		Mazdoor for preparation of ground	day	0.500	200.00	100.00	L-13
		Mali for fetching doobs grass roots and grassing at 15 cm apart	day	1.000	250.00	250.00	L-09
		b) Machinery					
		Water tanker 6 KL capacity	hour	0.500	444.00	222.00	P&M-060
		Tractor with tiller	hour	0.010	388.00	3.88	P&M-053
		c) Material					
		Supply of farm yard manure at site of work	cum	0.180	110.00	19.80	M-167
		Fine grass	kg	100.000	12.00	1200.00	M-113
		d) Overhead charges @ 10 % on (a+b+c)				183.32	
		e) Contractor's profit @ 10 % on (a+b+c+d)				201.65	
		Cost for 100 sqm = a+b+c+d+e				2218.15	
		Rate per sqm = (a+b+c+d+e)/100				22.18	
						<i>say</i>	<u>22.20</u>
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
		a) Labour					

		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)						
		Mali	day	10.000	250.00	2500.00		L-09
		b) Machinery						
		Water tanker6 KL capacity	hour	15.000	444.00	6660.00		P&M-060
		c) Material						
		Cost of water	KL	90.000	55.00	4950.00		M-189
		d) Overhead charges @ 10 % on (a+b+c)				1411.00		
		e) Contractor's profit @ 10 % on (a+b+c+d)				1552.10		
		Cost for 100 sqm = a+b+c+d+e				17073.10		
		Rate per sqm = (a+b+c+d+e)/100				170.73		
						say	<u>170.75</u>	
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	250.00	62.50		L-12
		Mazdoor for preparation of ground	day	1.000	200.00	200.00		L-13
		Mali for fetching doobs grass roots hedges and grassing at 10 cm apart	day	1.500	250.00	375.00		L-09
		b) Machinery						
		Water tanker6 KL capacity	hour	0.500	444.00	222.00		P&M-060
		Tractor with tiller	hour	0.010	388.00	3.88		P&M-053
		c) Material						
		Supply of farm yard manure at site of work @ 0.6 cum per 100 sqm	cum	0.600	110.00	66.00		M-167
		Fine grass	kg	100.000	12.00	1200.00		M-113
		d) Overhead charges @ 10 % on (a+b+c)				212.94		
		e) Contractor's profit @ 10 % on (a+b+c+d)				234.23		
		Cost for 100 sqm = a+b+c+d+e				2576.55		
		Rate per sqm = (a+b+c+d+e)/100				25.77		
						say	<u>25.75</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						

		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)					
		a) Labour					
		Mali	day	10.000	250.00	2500.00	L-09
		b) Machinery					
		Water tanker6 KL capacity	hour	20.000	444.00	8880.00	P&M-060
		c) Material					
		Cost of water	KL	60.000	55.00	3300.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				1468.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1614.80	
		Cost for 100 sqm = a+b+c+d+e				17762.80	
		Rate per sqm = (a+b+c+d+e)/100				177.63	
						say	177.65
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					
		<i>Unit = Running metre</i>					
		<i>Taking output = 100metre</i>					
		a) Labour					
		Mate	day	1.400	250.00	350.00	L-12
		Mazdoor for digging of trench 60 cm wide and 45 cm deep	day	10.000	200.00	2000.00	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	200.00	800.00	L-13
		b) Machinery					
		Water tanker6 KL capacity	hour	0.500	444.00	222.00	P&M-060
		c) Material					
		Cost of hedge plants 2 rows at 30 cm apart	each	2x340	7.00	4760.00	M-116
		Supply of farm yard manure at site of work	cum	4.670	110.00	513.70	M-167
		Pesticide	kg	0.250	280.00	70.00	M-136
		Cost of water	KL	3.000	55.00	165.00	M-189
		d) Overhead charges @ 10 % on (a+b+c)				888.07	
		e) Contractor's profit @ 10 % on (a+b+c+d)				976.88	
		Cost for 100 metres = a+b+c+d+e				10745.65	
		Rate per metre = a+b+c+d+e)/100				107.46	
						say	107.45
		(b) Maintenance of hedge for one year					
		<i>Unit = Running metre</i>					
		<i>Taking output = 100 m</i>					
		a) Labour					
		Mate	day	3.000	250.00	750.00	L-12
		Mazdoor	day	30.000	200.00	6000.00	L-13
		b) Machinery					
		Water tanker6 KL capacity	hour	5.000	444.00	2220.00	P&M-060
		c) Material					
		Manure sludge/Farm yard manure	cum	2.000	110.00	220.00	M-167
		Pesticide	kg	0.500	280.00	140.00	M-136
		Cost of water	KL	30.000	55.00	1650.00	M-189
		Cost of hedge plants @ 10 per cent casualty	each	68.000	7.00	476.00	M-116
		d) Overhead charges @ 10 % on (a+b+c)				1145.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1260.16	
		Cost for 100 metres = a+b+c+d+e				13861.76	
		Rate per metre = a+b+c+d+e)/100				138.62	
						say	138.60

			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)						
11.8	307		Planting and Maintaining of Flowering Plants and Shrubs						
		(a)	Planting flowering plants and shrubs in central verge						
			<i>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.</i>						
			<i>Taking output = 1000 metres</i>						
		a)	Labour						
			Mate	day	1.200	250.00	300.00		L-12
			Mazdoor	day	12.000	200.00	2400.00		L-13
		b)	Machinery						
			Water tanker6 KL capacity	hour	6.000	444.00	2664.00		P&M-060
		c)	Material						
			Plants	each	200.000	12.00	2400.00		M-100
			Shrubs	each	800.000	10.00	8000.00		M-166
			Manure sludge/Farm yard manure	cum	63.640	110.00	7000.40		M-167
			Pesticide	kg	0.500	280.00	140.00		M-136
			Cost of water	KL	36.000	55.00	1980.00		M-189
		d)	Overhead charges @ 10 % on (a+b+c)				2488.44		
		e)	Contractor's profit @ 10 % on (a+b+c+d)				2737.28		
			Rate per Km = (a+b+c+d+e)/1000				30110.12		
							<i>say</i> <u>30110.10</u>		
11.8		(b)	Maintenance of flowering plants and shrubs in central verge for one year						
			<i>Unit = km</i>						
			<i>Taking output = one km</i>						
		a)	Labour						
			Mate	day	36.000	250.00	9000.00		L-12
			Mazdoor	day	365.000	200.00	73000.00		L-13
		b)	Machinery						
			Water tanker6 KL capacity	hour	90.000	444.00	39960.00		P&M-060
		c)	Material						
			Manure Sludge / farm yard manure at site	cum	10.000	110.00	1100.00		M-167
			Cost of water	KL	180.000	55.00	9900.00		M-189
			Replacement of casualties @ 10 per cent						
			Plants	each	20.000	12.00	240.00		M-100
			Shrubs	each	80.000	10.00	800.00		M-166
			Pesticides	kg	1.500	280.00	420.00		M-136
		d)	Overhead charges @ 10 % on (a+b+c)				13442.00		
		e)	Contractor's profit @ 10 % on (a+b+c+d)				14786.20		
			Rate per Km for one year = (a+b+c+d+e)				162648.20		
							<i>say</i> <u>162648.20</u>		
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 pla						
			<i>Unit = Each</i>						
			<i>Taking output = 10 trees</i>						
		a)	Labour						
			Mate	day	1.700	250.00	425.00		L-12
			Mazdoor for planting	day	2.000	200.00	400.00		L-13
			Mazdoor for maintenance for one year	day	15.000	200.00	3000.00		L-13
		b)	Machinery						
			Water tanker6 KL capacity	hour	30.000	444.00	13320.00		P&M-060
		c)	Material						
			Sapling 2 m high 25 mm dia	each	10.000	80.00	800.00		M-160
			Farm yard manure	cum	0.940	110.00	103.40		M-167
			Pesticide	kg	0.500	280.00	140.00		M-136
			Cost of water	KL	12.000	55.00	660.00		M-189
		d)	Overhead charges @ 10 % on (a+b+c)				1884.84		
		e)	Contractor's profit @ 10 % on (a+b+c+d)				2073.32		
			Cost for 10 trees = a+b+c+d+e				22806.56		
			Rate per trees = (a+b+c+d+e)/10				2280.66		
							<i>say</i> <u>2280.65</u>		
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, in						
			<i>Unit = sqm</i>						
			<i>Taking output = 100 sqm</i>						

			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)						
			a) Labour						
			Mate	day	0.120	250.00	30.00		L-12
			Mazdoor	day	3.000	200.00	600.00		L-13
			b) Machinery						
			Water tanker 6 KL capacity	hour	0.500	444.00	222.00		P&M-060
			c) Material						
			Cost of water	KL	3.000	55.00	165.00		M-189
			d) Overhead charges @ 10 % on (a+b+c)				101.70		
			e) Contractor's profit @ 10 % on (a+b+c+d)				111.87		
			Cost for 100 sqm = a+b+c+d+e				1230.57		
			Rate per sqm = (a+b+c+d+e)				12.31		
							say	<u>12.30</u>	
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	110.00	110.00		M-167
			b) Overhead charges @ 10 % on (a)				11.00		
			c) Contractor's profit @ 10 % on (a+b)				12.10		
			Rate per cum = (a+b+c)				133.10		
								<u>133.10</u>	
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 intermedi						
			Unit = Each						
			Taking output = one tree guard						
			a) Labour						
			Mate	day	0.050	250.00	12.50		L-12
			Mason	day	0.250	300.00	75.00		L-11
			Mazdoor	day	0.250	200.00	50.00		L-13
			b) Material						
			Brick 2nd class including carriage	each	230.000	6.50	1495.00		M-079
			Cement mortar 1:6	cum	0.025	3146.00	78.65		Item 12.6 (D)
			c) Overhead charges @ 10 % on (a+b)				171.12		
			d) Contractor's profit @ 10 % on (a+b+c)				188.23		
			Rate per tree Guard = a+b+c+d				2070.49		
								say	<u>2070.50</u>
11.15		New	Edging with 2nd Class Bricks, Laid Dry Lengthwise						
			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	250.00	0.50		L-12
			Mason	day	0.050	300.00	15.00		L-11
			Mazdoor	day	0.050	200.00	10.00		L-13
			b) Material						
			Brick 2nd class including carriage	each	50.000	6.50	325.00		M-079
			c) Overhead charges @ 10 % on (a+b)				35.05		
			d) Contractor's profit @ 10 % on (a+b+c)				38.56		
			Cost for 10 metre = a+b+c+d				424.11		
			Rate per metre = (a+b+c+d)/10				42.41		
								say	<u>42.40</u>
11.16		New	Making Tree Guard 53 cm dia and 1.3 m High as per Design from Empty Bitumen Drums						
			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 i						
			Unit = Each						
			Taking output = one tree guard						
			a) Labour						
			Mate	day	0.020	250.00	5.00		L-12

			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)					
			Blacksmith	day	0.150	300.00	45.00	L-02
			Mazdoor	day	0.070	200.00	14.00	L-13
			b) Material					
			Empty bitumen drum	each	1.000	55.00	55.00	M-172
			MS sheet 50 x 0.5 mm	kg	0.650	45.22	29.39	M-179 /1000
			Rivets 6 mm dia and 10 mm in length	each	22.000	0.80	17.60	M-158
			d) Overhead charges @ 10 % on (a+b+c)				16.60	
			e) Contractor's profit @ 10 % on (a+b+c+d)				18.26	
			Rate for each tree guard = a+b+c+d				200.85	
						<i>say</i>	<u>200.85</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 t					
			<i>Unit = Each</i>					
			<i>Taking output = one tree guard</i>					
			a) Labour					
			Mate		0.040	250.00	10.00	L-12
			Blacksmith	day	0.200	300.00	60.00	L-02
			Mazdoor		0.200	200.00	40.00	L-13
			b) Material					
			Empty bitumen drum	each	1.500	55.00	82.50	M-172
			MS sheet 50 x 0.5 mm	kg	0.650	45.22	29.39	M-179 /1000
			Rivets 6 mm dia and 10 mm in length	each	50.000	0.80	40.00	M-158
			MSplate 30 x 3 mm	kg	1.300	45.22	58.78	M-179 /1000
			c) Overhead charges @ 10 % on (a+b)				32.07	
			d) Contractor's profit @ 10 % on (a+b+c)				35.27	

		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)							
		Rate for each tree guard = a+b+c+d						388.02	
								<i>say</i> <u>388.00</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 with							
		<i>Unit = quintal</i>							
		<i>Taking output = one quintal</i>							
		a) Labour							
		Mate	day	0.450	250.00	112.50			L-12
		Blacksmith/ welder for cutting to design and shape and jointing	day	2.000	300.00	600.00			L-02
		Mazdoor for fixing and helper for Blacksmith/welder	day	2.500	200.00	500.00			L-13
		b) Material							
		Angle, tees, channels etc	quintal	1.050	4521.90	4748.00			M-179 /10
		Deduct the cost of scrap	quintal	0.050	(1507.30)	(75.37)			M-179/10/3
		Add 5 per cent of cost of material for welding rods and other welding accessories				233.63			
		c) Overhead charges @ 10 % on (a+b)				611.88			
		d) Contractor's profit @ 10 % on (a+b+c)				673.06			
		Rate per quintal = a+b+c+d				7403.70			
								<i>say</i> <u>7403.70</u>	
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 i							
		<i>Unit = Each</i>							
		<i>Taking output = one tree guard</i>							
		a) Labour							
		Mate	day	0.050	250.00	12.50			L-12
		Blacksmith	day	0.250	300.00	75.00			L-02
		Mazdoor	day	0.250	200.00	50.00			L-13
		b) Material							
		MS iron 25 x 6 mm	kg	19.200	45.22	868.20			M-179 /1000
		MS iron 25 x 3 mm	kg	9.600	45.22	434.10			M-179 /1000
		Add 5 per cent of cost of material for riveting, bolting and welding accessories							
		c) Machinery							
		Tractor-trolley	hour	0.040	388.00	15.52			P&M-053
		d) Painting							
		Painting two coats including priming	sqm	1.770	53.30	94.34			Item 8.9
		e) Overhead charges @ 10 % on (a+b+c)				145.53			
		f) Contractor's profit @ 10 % on (a+b+c+e)				160.09			
		Rate per tree guard =a+b+c+d+e+f				1855.29			
								<i>say</i> <u>1854.75</u>	
	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.							

			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)						
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						
			<i>Unit = Each</i>						
			<i>Taking output = one</i>						
			a) Labour						
			Mate	day	0.050	250.00	12.50		L-12
			Blacksmith	day	0.250	300.00	75.00		L-02
			Welder	day	0.250	300.00	75.00		L-02
			Mazdoor	day	0.250	200.00	50.00		L-13
			b) Material						
			MS angle 30 x 30 x 3 mm	kg	13.500	45.22	610.46		M-179 /1000
			MS iron 25 x 3 mm	kg	18.000	45.22	813.94		M-179 /1000
			Steel wire 3 mm dia	kg	6.000	132.00	792.00		M-192
			Add 5 per cent of cost of material for riveting, bolting and welding accessories				110.82		
			c) Machinery						
			Tractor-trolley	hour	0.040	388.00	15.52		P&M-053
			d) Painting						
			Painting two coats including priming	sqm	1.500	53.30	79.95		Item 8.9
			e) Overhead charges @ 10 % on (a+b+c)				255.52		
			f) Contractor's profit @ 10 % on (a+b+c+e)				281.08		
			Rate per tree guard = a+b+c+d+e+f				3171.79		
							<i>say</i>	3171.35	
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 sapli						
			<i>Unit = Hectare</i>						
			<i>Taking output = one hectare</i>						
			a) Labour						
			i) Planting						
			Mate	day	2.500	250.00	625.00		L-12
			Mazdoor	day	25.000	200.00	5000.00		L-13
			ii) For Maintenance for one year						
			Mate	day	5.000	250.00	1250.00		L-12
			Mazdoor	day	50.000	200.00	10000.00		L-13
			b) Machinery						
			Dozer D 50 @ 1000 sqm/hour	hour	10.000	2393.00	23930.00		P&M-015
			Water tanker 6 KL capacity (for planting)	hour	3.000	444.00	1332.00		P&M-060
			Water tanker 6 KL capacity (for maintenance)	hour	25.000	444.00	11100.00		P&M-060
			c) Material						
			Sapling 1 to 1.5 m high 2 cm dia stem	each	290.000	64.00	18560.00		M-160 x 0.8
			Add 10 per cent of sapling	each	29.000	64.00	1856.00		M-160 x 0.8
			Decayed farm yard/sludge manure (planting)	cum	60.900	110.00	6699.00		M-167
			Decayed farm yard/sludge manure (maintenance)	cum	4.000	110.00	440.00		M-167
			Pesticides for planting	kg	0.500	280.00	140.00		M-136
			Pesticides for maintenance	kg	1.500	280.00	420.00		M-136
			Cost of water	KL	18.000	55.00	990.00		M-189
			d) Overhead charges @ 10 % on (a+b+c)				8234.20		
			e) Contractor's profit @ 10 % on (a+b+c+d)				9057.62		
			Rate per hectare = a+b+c+d+e				99633.82		
							<i>say</i>	99633.80	
		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	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					
		I Ordinary soil					
		Unit = cum					
		Taking output = 10 cum					
		A Manual Means					
		(i) Depth upto 3 m					
		a) Labour					
		Mate	day	0.14	250.00	35.00	L-12
		Mazdoor	day	3.50	200.00	700.00	L-13
		b) Overhead charges @ 20 % on (a)				147.00	
		c) Contractor's profit @ 10 % on (a+b)				88.20	
		Cost for 10 cum = a+b+c				970.20	
		Rate per cum = (a+b+c)/10				97.02	
					say	97.00	
		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					
		I Ordinary soil					
		Unit = cum					
		Taking output = 10 cum					
		A Manual Means					
		(i) Depth upto 3 m					
		a) Labour					
		Mate	day	0.154	250.00	38.50	L-12
		Mazdoor	day	3.85	200.00	770.00	L-13
		b) Overhead charges @ 20 % on (a)				161.70	
		c) Contractor's profit @ 10 % on (a+b)				97.02	
		Cost for 10 cum = a+b+c				1067.22	
		Rate per cum = (a+b+c)/10				106.72	
					say	106.70	
12.1 (I) A		(ii) Depth 3 m to 6 m (without de-watering)					
		a) Labour					
		Mate/Supervisor	day	0.18	250.00	45.00	L-12
		Mazdoor	day	4.50	200.00	900.00	L-13
		b) Overhead charges @ 20 % on (a)				189.00	
		c) Contractor's profit @ 10 % on (a+b)				113.40	
		Cost for 10 cum = a+b+c				1247.40	
		Rate per cum = (a+b+c)/10				124.74	
					say	124.75	
		Depth 3 m to 6 m (with de-watering)					
		a) Labour					
		Mate/Supervisor	day	0.207	250.00	51.75	L-12
		Mazdoor	day	5.175	200.00	1035.00	L-13
		b) Overhead charges @ 20 % on (a)				217.35	
		c) Contractor's profit @ 10 % on (a+b)				130.41	
		Cost for 10 cum = a+b+c				1434.51	
		Rate per cum = (a+b+c)/10				143.45	
					say	143.45	
12.1 (I) A		(iii) Depth above 6 m (without de-watering)					
		a) Labour					
		Mate/Supervisor	day	0.24	250.00	60.00	L-12
		Mazdoor	day	6.00	200.00	1200.00	L-13
		b) Overhead charges @ 20 % on (a)				252.00	
		c) Contractor's profit @ 10 % on (a+b)				151.20	
		Cost for 10 cum = a+b+c				1663.20	
		Rate per cum = (a+b+c)/10				166.32	
					say	166.30	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Depth above 6 m (with de-watering)					
		a) Labour					
		Mate/Supervisor	day	0.29	250.00	72.00	L-12
		Mazdoor	day	7.20	200.00	1440.00	L-13
		b) Overhead charges @ 20 % on (a)				302.40	
		c) Contractor's profit @ 10 % on (a+b)				181.44	
		Cost for 10 cum = a+b+c				1995.84	
		Rate per cum = (a+b+c)/10				199.58	
						<i>say</i>	<u>199.60</u>
12.1 (I)		B Mechanical Means					
		(i) Depth upto 3 m (without de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 240 cum</i>					
		a) Labour					
		Mate	day	0.32	250.00	80.00	L-12
		Mazdoor	day	8.00	200.00	1600.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1428.00	8568.00	P&M-026
		c) Overhead charges @ 20 % on (a+b)				2049.60	
		d) Contractor's profit @ 10 % on (a+b+c)				1229.76	
		Cost for 240 cum = a+b+c+d				13527.36	
		Rate per cum = (a+b+c+d)/240				56.36	
						<i>say</i>	<u>56.35</u>
		Depth upto 3 m (with de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 240 cum</i>					
		a) Labour					
		Mate	day	0.34	250.00	84.00	L-12
		Mazdoor	day	8.40	200.00	1680.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.30	1428.00	8996.40	P&M-026
		c) Overhead charges @ 20 % on (a+b)				2152.08	
		d) Contractor's profit @ 10 % on (a+b+c)				1291.25	
		Cost for 240 cum = a+b+c+d				14203.73	
		Rate per cum = (a+b+c+d)/240				59.18	
						<i>say</i>	<u>59.20</u>
12.1 (I) B		(ii) Depth 3 m to 6 m (without de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 210 cum</i>					
		a) Labour					
		Mate	day	0.32	250.00	80.00	L-12
		Mazdoor	day	8.00	200.00	1600.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1428.00	8568.00	P&M-026
		c) Overhead charges @ 20 % on (a+b)				2049.60	
		d) Contractor's profit @ 10 % on (a+b+c)				1229.76	
		Cost for 210 cum = a+b+c+d				13527.36	
		Rate per cum = (a+b+c+d)/210				64.42	
						<i>say</i>	<u>64.40</u>
		Depth 3 m to 6 m (with de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 210 cum</i>					
		a) Labour					
		Mate	day	0.34	250.00	86.00	L-12
		Mazdoor	day	8.60	200.00	1720.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.45	1428.00	9210.60	P&M-026
		c) Overhead charges @ 20 % on (a+b)				2203.32	
		d) Contractor's profit @ 10 % on (a+b+c)				1321.99	
		Cost for 210 cum = a+b+c+d				14541.91	
		Rate per cum = (a+b+c+d)/210				69.25	
						<i>say</i>	<u>69.25</u>
12.1 (I) B		(iii) Depth above 6m (without de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 180 cum</i>					
		a) Labour					
		Mate	day	0.40	250.00	100.00	L-12
		Mazdoor	day	10.00	200.00	2000.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1428.00	8568.00	P&M-026
		c) Overhead charges @ 20 % on (a+b)				2133.60	
		d) Contractor's profit @ 10 % on (a+b+c)				1280.16	
		Cost for 180 cum = a+b+c+d				14081.76	
		Rate per cum = (a+b+c+d)/180				78.23	
						<i>say</i>	<u>78.25</u>

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Depth above 6m (with de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 180 cum</i>					
		a) Labour					
		Mate	day	0.44	250.00	110.00	L-12
		Mazdoor	day	11.00	200.00	2200.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.60	1428.00	9424.80	P&M-026
		c) Overhead charges @ 20 % on (a+b)				2346.96	
		d) Contractor's profit @ 10 % on (a+b+c)				1408.18	
		Cost for 180 cum = a+b+c+d				15489.94	
		Rate per cum = (a+b+c+d)/180				86.06	
					<i>say</i>	<u>86.05</u>	
12.1		II Ordinary Rock (not requiring blasting)					
		A Manual Means					
		(i) Depth upto 3 m (without de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
		a) Labour					
		Mate	day	0.20	250.00	50.00	L-12
		Mazdoor	day	5.00	200.00	1000.00	L-13
		b) Overhead charges @ 20 % on (a)				210.00	
		c) Contractor's profit @ 10 % on (a+b)				126.00	
		Cost for 10 cum = a+b+c				1386.00	
		Rate per cum = (a+b+c)/10				138.60	
					<i>say</i>	<u>138.60</u>	
		Depth upto 3 m (with de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
		a) Labour					
		Mate	day	0.22	250.00	55.00	L-12
		Mazdoor	day	5.50	200.00	1100.00	L-13
		b) Overhead charges @ 20 % on (a)				231.00	
		c) Contractor's profit @ 10 % on (a+b)				138.60	
		Cost for 10 cum = a+b+c				1524.60	
		Rate per cum = (a+b+c)/10				152.46	
					<i>say</i>	<u>152.45</u>	
12.1(i)		B Mechanical Means					
		Depth upto 3 m (without de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 180 cum</i>					
		a) Labour					
		Mate	day	0.24	250.00	60.00	L-12
		Mazdoor	day	6.00	200.00	1200.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1428.00	8568.00	P&M-026
		c) Overhead charges @ 20 % on (a+b)				1965.60	
		d) Contractor's profit @ 10 % on (a+b+c)				1179.36	
		Cost for 180 cum = a+b+c+d				12972.96	
		Rate per cum = (a+b+c+d)/180				72.07	
					<i>say</i>	<u>72.05</u>	
		Depth upto 3 m (without de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 180 cum</i>					
		a) Labour					
		Mate	day	0.26	250.00	66.00	L-12
		Mazdoor	day	6.60	200.00	1320.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.60	1428.00	9424.80	P&M-026
		c) Overhead charges @ 20 % on (a+b)				2162.16	
		d) Contractor's profit @ 10 % on (a+b+c)				1297.30	
		Cost for 180 cum = a+b+c+d				14270.26	
		Rate per cum = (a+b+c+d)/180				79.28	
					<i>say</i>	<u>79.30</u>	
12.1		III Hard Rock (requiring blasting)					
		A Manual Means					
		Without de-watering					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
		a) Labour					
		Mate	day	0.35	250.00	87.50	L-12
		Driller	day	0.50	250.00	125.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	8.00	200.00	1600.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.00	469.00	469.00	P&M-001
		c) Material					
		Blasting Material	kg	3.50	135.00	472.50	M-104
		Detonator electric	each	14.00	9.00	126.00	M-094/100
		d) Overhead charges @ 20 % on (a+b+c)				588.50	
		e) Contractor's profit @ 10 % on (a+b+c+d)				353.10	
		Cost for 10 cum = a+b+c+d+e				3884.10	
		Rate per cum = (a+b+c+d+e)/10				388.41	
					<i>say</i>	<u>388.40</u>	
		Without de-watering					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
		a) Labour					
		Mate	day	0.39	250.00	96.25	L-12
		Driller	day	0.55	250.00	137.50	L-06
		Blaster	day	0.28	250.00	68.75	L-03
		Mazdoor	day	8.80	200.00	1760.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.10	469.00	515.90	P&M-001
		c) Material					
		Blasting Material	kg	3.50	135.00	472.50	M-104
		Detonator electric	each	14.00	9.00	126.00	M-094/100
		d) Overhead charges @ 20 % on (a+b+c)				635.38	
		e) Contractor's profit @ 10 % on (a+b+c+d)				381.23	
		Cost for 10 cum = a+b+c+d+e				4193.51	
		Rate per cum = (a+b+c+d+e)/10				419.35	
					<i>say</i>	<u>419.35</u>	
12.1		IV Hard Rock (blasting prohibited)					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
		A Mechanical Means (without de-watering)					
		a) Labour					
		Mate	day	0.20	250.00	50.00	L-12
		Mazdoor	day	5.00	200.00	1000.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.00	469.00	2814.00	P&M-001
		c) Overhead charges @ 20 % on (a+b)				772.80	
		d) Contractor's profit @ 10 % on (a+b+c)				463.68	
		Cost for 10 cum = a+b+c+d				5100.48	
		Rate per cum = (a+b+c+d)/10				510.05	
					<i>say</i>	<u>510.05</u>	
		Mechanical Means (with de-watering)					
		a) Labour					
		Mate	day	0.22	250.00	55.00	L-12
		Mazdoor	day	5.50	200.00	1100.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.60	469.00	3095.40	P&M-001
		c) Overhead charges @ 20 % on (a+b)				850.08	
		d) Contractor's profit @ 10 % on (a+b+c)				510.05	
		Cost for 10 cum = a+b+c+d				5610.53	
		Rate per cum = (a+b+c+d)/10				561.05	
					<i>say</i>	<u>561.05</u>	
12.1		V Marshy Soil					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
		Depth upto 3 m					
		A Manual means (without de-watering)					
		a) Labour					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mate/Supervisor	day	0.40	250.00	100.00	L-12
		Mazdoor	day	10.00	200.00	2000.00	L-13
		b) Machinery					
		Tractor-trolley for removal.	hour	2.67	388.00	1035.96	P&M-053
		c) Overhead charges @ 20 % on (a+b)				627.19	
		d) Contractor's profit @ 10 % on (a+b+c)				376.32	
		Cost for 10 cum = a+b+c+d				4139.47	
		Rate per cum = (a+b+c+d)/ 10				413.95	
					say	<u>413.95</u>	
		Manual means (with de-watering)					
		a) Labour					
		Mate/Supervisor	day	0.52	250.00	130.00	L-12
		Mazdoor	day	13.00	200.00	2600.00	L-13
		b) Machinery					
		Tractor-trolley for removal.	hour	2.67	388.00	1035.96	P&M-053
		c) Overhead charges @ 20 % on (a+b)				753.19	
		d) Contractor's profit @ 10 % on (a+b+c)				451.92	
		Cost for 10 cum = a+b+c+d				4971.07	
		Rate per cum = (a+b+c+d)/ 10				497.11	
					say	<u>497.10</u>	
12.1 (V)	B	Mechanical Means (without de-watering)					
		a) Labour					
		Mate	day	0.08	250.00	20.00	L-12
		Mazdoor for dressing sides, bottom and backfilling	day	2.00	200.00	400.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.17	1428.00	242.76	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.45	554.00	249.30	P&M-048
		c) Overhead charges @ 20 % on (a+b)				182.41	
		d) Contractor's profit @ 10 % on (a+b+c)				109.45	
		Cost for 10 cum = a+b+c+d				1203.92	
		Rate per cum = (a+b+c+d)/10				120.39	
					say	<u>120.40</u>	
		Mechanical Means (with de-watering)					
		a) Labour					
		Mate	day	0.10	250.00	24.00	L-12
		Mazdoor for dressing sides, bottom and backfilling	day	2.40	200.00	480.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.20	1428.00	291.31	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.54	554.00	299.16	P&M-048
		c) Overhead charges @ 20 % on (a+b)				218.89	
		d) Contractor's profit @ 10 % on (a+b+c)				131.34	
		Cost for 10 cum = a+b+c+d				1444.70	
		Rate per cum = (a+b+c+d)/10				144.47	
					say	<u>144.45</u>	
	VI	Back Filling in Marshy Foundation Pits					
		Unit : Cum					
		Taking Output : 6 cum					
		a) Labour					
		Mate	day	0.12	250.00	30.00	L-12
		Mazdoor for dressing sides, bottom and backfilling	day	3.00	200.00	600.00	L-13
		b) Machinery					
		Tractor-trolley for transportation	hour	2.00	388.00	776.00	P&M-053
		c) Overhead charges @ 20 % on (a+b)				281.20	
		d) Contractor's profit @ 10 % on (a+b+c)				168.72	
		Cost for 6 cum = a+b+c+d				1855.92	
		Rate per cum = (a+b+c+d)/6				309.32	
					say	<u>309.30</u>	
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.					
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	250.00	2.50	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	day	0.30	200.00	60.00	L-13
		b) Material					
		Sand (assuming 20 per cent voids)	cum	1.20	490.00	588.00	M-006
		c) Overhead charges @ 20 % on (a+b)				130.10	
		d) Contractor's profit @ 10 % on (a+b+c)				78.06	
		Rate per cum = a+b+c+d				858.66	
					say	858.65	
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	250.00	160.00	L-12
		Mason	day	1.00	300.00	300.00	L-11
		Mazdoor	day	15.00	200.00	3000.00	L-13
		b) Material					
		40 mm Aggregate	cum	13.50	594.00	8019.00	M-055
		coarse Sand	cum	6.75	490.00	3307.50	M-005
		cement	tonne	3.45	7989.00	27562.05	M-081
		Cost of water	KL	18.00	55.00	990.00	M-189
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Water tanker 6 KL capacity	hour	2.00	444.00	888.00	P&M-060
		d) Overhead charges @ 20 % on (a+b+c)				9553.31	
		e) Contractor's profit @ 10 % on (a+b+c+d)				5731.99	
		Cost for 15 cum = a+b+c+d+e				63051.85	
		Rate per cum = (a+b+c+d+e)/15				4203.46	
					say	4203.45	
		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	6.50	16250.00	M-079
		Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.20	4779.00	5734.80	Item 12.6 (A)
		b) Labour					
		Mate	day	0.48	250.00	120.00	L-12
		Mason	day	4.00	300.00	1200.00	L-11
		Mazdoor	day	8.00	200.00	1600.00	L-13
		c) Overhead charges @ 20 % on (a+b)				4980.96	
		d) Contractor's profit @ 10 % on (a+b+c)				2988.58	
		Cost for 5 cum = a+b+c+d				32874.34	
		Rate per cum (a+b+c+d)/5				6574.87	
					say	6574.85	
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	7989.00	4074.39	M-081
		Sand	cum	1.05	490.00	514.50	M-005
		b) Labour					
		Mate	day	0.04	250.00	10.00	L-12
		Mazdoor	day	0.90	200.00	180.00	L-13
		Total Material and Labour = (a+b)				say	4779.00
	Sub-analysis (Addl.)	(B) Cement Mortar 1:2 (1cement :2 sand)					
		Unit = 1 cum					
		Taking output = 1 cum					
		a) Materials					
		Cement	tonne	0.67	7989.00	5368.61	M-081
		Sand	cum	0.93	490.00	455.70	M-005
		b) Labour					
		Mate	day	0.04	250.00	10.00	L-12

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	day	0.90	200.00	180.00	L-13
		Total Material and Labour = (a+b)			say	6014.00	
	Sub-analysis (Addl.)	(C) Cement Mortar1:4 (1cement :4 sand)					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Materials					
		Cement	tonne	0.40	7989.00	3221.16	M-081
		Sand	cum	1.12	490.00	548.80	M-005
		b) Labour					
		Mate	day	0.04	250.00	10.00	L-12
		Mazdoor	day	0.90	200.00	180.00	L-13
		Total Material and Labour = (a+b)			say	3960.00	
	Sub-analysis (Addl.)	(D) Cement Mortar1:6 (1cement :6 sand)					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Materials					
		Cement	tonne	0.29	7989.00	2300.83	M-081
		Sand	cum	1.34	490.00	655.20	M-005
		b) Labour					
		Mate	day	0.04	250.00	10.00	L-12
		Mazdoor	day	0.90	200.00	180.00	L-13
		Total Material and Labour = (a+b)			say	3146.00	
12.7	1400	Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications.					
		<i>Unit = cum</i>					
		<i>Taking output = 5 cum</i>					
	1405.4	(A) Square Rubble Coursed Rubble Masonry (first sort)					
		a) Material					
		Stone	cum	5.50	470.00	2585.00	M-169
		Through and bond stone	each	35.00	12.00	420.00	M-182
		(35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)					
		Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.50	4779.00	7168.50	Item 12.6 (A)
		b) Labour					
		Mate	day	0.66	250.00	165.00	L-12
		Mason	day	7.50	300.00	2250.00	L-11
		Mazdoor	day	9.00	200.00	1800.00	L-13
		c) Overhead charges @ 20 % on (a+b)				2877.70	
		d) Contractor's profit @ 10 % on (a+b+c)				1726.62	
		Cost for 5 cum = a+b+c+d				18992.82	
		Rate per cum (a+b+c+d)/5				3798.56	
					say	3798.55	
	1405.3	(B) Random Rubble Masonry (coursed/uncoursed)					
		<i>Unit = cum</i>					
		<i>Taking output = 5 cum</i>					
		a) Material					
		Stone	cum	5.50	470.00	2585.00	M-148
		Through and bond stone	each	35.00	12.00	420.00	M-182
		(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	4779.00	7407.45	Item 12.6 (A)
		b) Labour					
		Mate	day	0.62	250.00	155.00	L-12
		Mason	day	6.00	300.00	1800.00	L-11
		Mazdoor	day	9.00	200.00	1800.00	L-13
		c) Overhead charges @ 20 % on (a+b)				2833.49	
		d) Contractor's profit @ 10 % on (a+b+c)				1700.09	
		Cost for 5 cum = a+b+c+d				18701.03	
		Rate per cum (a+b+c+d)/5				3740.21	
					say	3740.20	
	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 (i) PCC Grade M15					
		<i>Unit = cum</i>					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	4.13	7989.00	32994.57	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	8.10	594.00	4811.40	M-055
		20 mm Aggregate	cum	4.05	726.00	2940.30	M-053
		10 mm Aggregate	cum	1.35	1650.00	2227.50	M-051
		b) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 63 KVA	hour	6.00	495.00	2970.00	P&M-019
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>3683.00</i>			
		d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				2209.45	
		e) Overhead charges @ 20 % on (a+b+c+d)				11489.14	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				6893.49	
		Cost for 15 cum = a+b+c+d+e+f				75828.35	
		Rate per cum = (a+b+c+d+e+f)/15				5055.22	
					<i>say</i>	<i>5055.20</i>	
		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					
		<i>Unit : cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	5.16	7989.00	41223.24	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	5.40	594.00	3207.60	M-055
		20 mm Aggregate	cum	5.40	726.00	3920.40	M-053
		10 mm Aggregate	cum	2.70	1650.00	4455.00	M-051
		b) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>4288.00</i>			
		d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				2572.75	
		e) Overhead charges @ 20 % on (a+b+c+d)				13378.30	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				8026.98	
		Cost for 15 cum = a+b+c+d+e+f				88296.77	
		Rate per cum = (a+b+c+d+e+f)/15				5886.45	
					<i>say</i>	<i>5886.45</i>	
12.8	C	RCC Grade M20					
		Case I Using Concrete Mixer					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	5.21	7989.00	41622.69	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>4529.00</i>			
		d) Formwork @ 4 per cent on (a+b+c)				2717.03	
		e) Overhead charges @ 20 % on (a+b+c+d)				14128.56	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				8477.14	
		Cost for 15 cum = a+b+c+d+e+f				93248.52	

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				6216.57	
					say	6217.55	
12.8 C	Case II	With Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit : cum</i>					
		<i>Taking Output = 120 cum</i>					
	a)	Material					
		Cement	tonne	41.66	7989.00	332821.74	M-081
		Coarse Sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
	b)	Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 km, L-lead in km	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6	254.00	1524.00	P&M-007
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		4261.00			
	d)	Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				20449.75	
	e)	Overhead charges @ 20 % on (a+b+c+d)				106338.70	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				63803.22	
		Cost for 120 cum = a+b+c+d+e+f				701835.41	
		Rate per cum = (a+b+c+d+e+f)/120				5848.63	
					say	5848.65	
12.8	D	PCC Grade M25					
	Case I	Using Concrete Mixer					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
	a)	Material					
		Cement	tonne	5.99	7989.00	47854.11	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	5.40	594.00	3207.60	M-055
		20 mm Aggregate	cum	5.40	726.00	3920.40	M-053
		10 mm Aggregate	cum	2.70	1650.00	4455.00	M-051
	b)	Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		4730.00			
	d)	Formwork @ 3.75 per cent of (a+b+c)				2660.61	
	e)	Overhead charges @ 20 % on (a+b+c+d)				14722.04	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				8833.23	
		Cost for 15 cum = a+b+c+d+e+f				97165.49	
		Rate per cum = (a+b+c+d+e+f)/15				6477.70	
					say	6477.70	
12.8 D	Case II	With Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit : cum</i>					
		<i>Taking Output = 120 cum</i>					
	a)	Material					
		Cement	tonne	47.95	7989.00	383072.55	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		40 mm Aggregate	cum	43.20	540.00	23328.00	M-055
		20 mm Aggregate	cum	43.20	660.00	28512.00	M-053
		10 mm Aggregate	cum	21.60	1500.00	32400.00	M-051
	b)	Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6	254.00	1524.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4485.00			
		d) Formwork @ 3.75 per cent of cost of concrete i.e. cost of material, labour and machinery				20181.25	
		e) Overhead charges @ 20 % on (a+b+c+d)				111669.56	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				67001.74	
		cost of 120 cum = a+b+c+d+e+f				737019.09	
		Rate per cum = (a+b+c+d+e+f)/120				6141.83	
					<i>say</i>	6141.85	
12.8	E	RCC Grade M25					
		Case I Using Concrete Mixer					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	6.05	7989.00	48333.45	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4976.00			
		d) Formwork @ 3.75 per cent of a+b+c.				2798.87	
		e) Overhead charges @ 20 % on (a+b+c+d)				15487.08	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				9292.25	
		cost of 15 cum = a+b+c+d+e+f				102214.76	
		Rate per cum (a+b+c+d+e+f)/15				6814.32	
					<i>say</i>	6814.30	
12.8 E		Case II With Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit: cum</i>					
		<i>Taking Output = 120 cum</i>					
		a) Material					
		Cement	tonne	48.38	7989.00	386507.82	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixer	Kg	193.52	50.00	9676.00	
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity 1 cum	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4789.00			
		d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				21547.72	
		e) Overhead charges @ 20 % on (a+b+c+d)				119230.71	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				71538.42	
		cost of 120 cum = a+b+c+d+e+f				786922.67	
		Rate per cum (a+b+c+d+e+f)/120				6557.69	
					<i>say</i>	6557.70	
12.8	F	PCC Grade M30					
		Case I Using Concrete Mixer					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cement	tonne	6.08	7989.00	48573.12	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	5.40	594.00	3207.60	M-055
		20 mm Aggregate	cum	5.40	726.00	3920.40	M-053
		10 mm Aggregate	cum	2.70	1650.00	4455.00	M-051
		b) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4778.00			
		d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				2508.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				14835.40	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				8901.24	
		cost of 15 cum = a+b+c+d+e+f				97913.67	
		Rate per cum (a+b+c+d+e+f)/15				6527.58	
					<i>say</i>	6527.60	
12.8 F		Case II Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit : cum</i>					
		<i>Taking Output = 120 cum</i>					
		a) Material					
		Cement	tonne	48.60	7989.00	388265.40	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		40 mm Aggregate	cum	43.20	540.00	23328.00	M-055
		20 mm Aggregate	cum	43.20	660.00	28512.00	M-053
		10 mm Aggregate	cum	21.60	1500.00	32400.00	M-051
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4528.00			
		d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				19017.58	
		e) Overhead charges @ 20 % on (a+b+c+d)				112475.40	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				67485.24	
		cost of 120 cum = a+b+c+d+e+f				742337.61	
		Rate per cum (a+b+c+d+e+f)/120				6186.15	
					<i>say</i>	6186.15	
12.8	G	RCC Grade M30					
		Case I Using Concrete Mixer					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	6.10	7989.00	48732.90	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		5003.00			
		d) Formwork @ 3.5 per cent on cost of concrete i.e. cost of material, labour and machinery				2626.26	
		e) Overhead charges @ 20 % on (a+b+c+d)				15532.45	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				9319.47	
		cost of 15 cum = a+b+c+d+e+f				102514.18	

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				6834.28	
					say	6834.30	
12.8 G	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
	a)	Material					
		Cement	tonne	48.80	7989.00	389863.20	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
	b)	Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		4736.00			
	d)	Formwork @ 3.5 per cent of cost of concrete i.e. cost of material, labour and machinery				19889.98	
	e)	Overhead charges @ 20 % on (a+b+c+d)				117635.04	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				70581.02	
		cost of 120 cum = a+b+c+d+e+f				776391.24	
		Rate per cum (a+b+c+d+e+f)/120				6469.93	
					say	6469.95	
12.8	H	RCC Grade M35					
	Case I	Using Concrete Mixer					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
	a)	Material					
		Cement	tonne	6.33	7989.00	50570.37	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
	b)	Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		5125.00			
	d)	Formwork @ 3 per cent on a+b+c				2306.20	
	e)	Overhead charges @ 20 % on (a+b+c+d)				15835.93	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				9501.56	
		cost of 15 cum = a+b+c+d+e+f				104517.17	
		Rate per cum = (a+b+c+d+e+f)/15				6967.81	
					say	6967.80	
12.8 H	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit ; cum</i>					
		<i>Taking Output = 120 cum</i>					
	a)	Material					
		Cement	tonne	50.64	7989.00	404562.96	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
	b)	Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4859.00			
		d) Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				17489.55	
		e) Overhead charges @ 20 % on (a+b+c+d)				120094.90	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				72056.94	
		cost of 120 cum = a+b+c+d+e+f				792626.35	
		Rate per cum = (a+b+c+d+e+f)/120				6605.22	
					<i>say</i>	6605.20	
		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.					
		<i>Unit = 1 No</i>					
		<i>Taking output = 1 No.</i>					
		a) Material					
		Earth (compacted)	cum	251.20	0.00	0.00	M-092
		Sand bags	each	750.00	8.00	6000.00	M-159
		b) Labour					
		Mate	day	0.40	250.00	100.00	L-12
		Mazdoor for filling sand bags, stitching and placing	day	15.00	200.00	3000.00	L-13
		c) Machinery					
		Crane with grab 1 cum capacity	hour	20.00	847.00	16940.00	P&M-012
		Consumables @ 2.5 per cent of (c) above				423.50	
		d) Overhead charges @ 20 % on (a+b+c)				5292.70	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3175.62	
		Rate per No. (a+b+c+d+e)				34931.82	
					<i>say</i>	34931.80	
		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.					
		<i>Unit = 1No</i>					
		<i>Taking output = 1 No</i>					
		a) Material					
		Earth (compacted)	cum	904.32	0.00	0.00	M-092
		Sand bags	each	6000.00	8.00	48000.00	M-159
		Wooden ballies 8" Dia and 9 m long	each	95.00	450.00	42750.00	M-194
		Wooden ballies 2" Dia for bracing	metre	190.00	35.00	6650.00	M-193
		b) Labour					
		Mate	day	5.60	250.00	1400.00	L-12
		Mazdoor for piling 8" dia ballies for piling 8" dia ballies	day	18.00	200.00	3600.00	L-13
		Mazdoor for bracing with 2" dia ballies	day	12.00	200.00	2400.00	L-13
		Mazdoor for filling sand bags, stitching and placing	day	110.00	200.00	22000.00	L-13
		c) Machinery					
		Crane with grab 1 cum capacity	hour	50.00	847.00	42350.00	P&M-012
		Consumables and other arrangements for piling ballies @ 2.5 per cent of (a+b+c).				4228.75	
		d) Overhead charges @ 20 % on (a+b+c)				34675.75	
		e) Contractor's profit @ 10 % on (a+b+c+d)				20805.45	
		Rate per No. (a+b+c+d+e)				228859.95	
					<i>say</i>	228859.95	
		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.					
12.9	C	Providing and constructing one span service road to reach island location from one pier location to another pier location					
		Assuming span length 30 m, width of service road 10m and depth of water 1m					
		<i>Unit = 1 meter</i>					
		<i>Taking output = 30 metre</i>					
		a) Material					
		Earth	cum	450.00	0.00	0.00	M-092
		Sand bags	each	300.00	8.00	2400.00	M-159
		b) Labour					
		Mate	day	0.24	250.00	60.00	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor for filling sand bags, stitching and placing	day	6.00	200.00	1200.00	L-13
		c) Machinery					
		Front end Loader 1 cum capacity	hour	27.00	1139.00	30753.00	P&M-017
		Tipper 5.5 cum capacity	hour	28.00	554.00	15512.00	P&M-048
		d) Overhead charges @ 20 % on (a+b+c)				9985.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				5991.00	
		Cost for 30 m (a+b+c+d+e)				65901.00	
		Rate per m (a+b+c+d+e)/30				2196.70	
					<i>say</i>	2196.70	
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.					
		<i>Unit = 1 MT</i>					
		<i>Taking output = 1 MT</i>					
		a) Material					
		Structural steel in plates, angles, etc including 5 per cent wastage	tonne	1.05	45219.00	47479.95	M-179
		Nuts & bolts	Kg	20.00	50.00	1000.00	M-130
		b) Labour					
		(for cutting, bending, making holes, joining, welding and erecting in position)					
		Mate	day	1.32	250.00	330.00	L-12
		Fitter	day	5.50	300.00	1650.00	L-08
		Blacksmith	day	5.50	300.00	1650.00	L-02
		Welder	day	5.50	300.00	1650.00	L-02
		Mazdoor	day	16.50	200.00	3300.00	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Electrodes, cutting gas and other consumables @ 10 per cent of cost of (a) above				4848.00	
		c) Overhead charges @ 20 % on (a+b)				12381.59	
		d) Contractor's profit @ 10 % on (a+b+c)				7428.95	
		Rate per MT (a+b+c+d)				81718.49	
					say	<u>81718.50</u>	
12.11	1200, 1500 & 1700	Plain/Reinforced Cement Concrete, in Well Foundation complete as per Drawing and Technical Specification.					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 1 cum</i>					
		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)				4529.00	
		d) formwork @ 20 per cent of the cost of concrete				905.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				1086.96	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				652.18	
		Rate perm (a+b+c+d+e+f)				7173.94	
					say	<u>7173.95</u>	
12.11 A		Case II With Batching Plant, Transit Mixer and Concrete Pump					
(i)							
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4261.00	
		d) formwork @ 20 per cent of the cost of concrete				852.20	
		e) Overhead charges @ 20 % on (a+b+c+d)				1022.64	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				613.58	
		Rate perm (a+b+c+d+e+f)				6749.42	
					say	<u>6749.40</u>	
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)				4976.00	
		d) formwork @ 20 per cent of the cost of concrete				995.20	
		e) Overhead charges @ 20 % on (a+b+c+d)				1194.24	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				716.54	
		Rate perm (a+b+c+d+e+f)				7881.98	
					say	<u>7882.00</u>	
12.11 A		Case II With Batching Plant, Transit Mixer and Concrete Pump					
(ii)							
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4789.00	
		d) formwork @ 20 per cent of the cost of concrete				957.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				1149.36	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				689.62	
		Rate perm (a+b+c+d+e+f)				7585.78	
					say	<u>7585.80</u>	
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)				5125.00	
		d) formwork @ 20 per cent of the cost of concrete				1025.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				1230.00	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				738.00	
		Rate perm (a+b+c+d+e+f)				8118.00	
					say	<u>8118.00</u>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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)				4914.00	
		d) formwork @ 20 per cent of the cost of concrete				982.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				1179.36	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				707.62	
		Rate perm (a+b+c+d+e+f)				7783.78	
					say	<u>7783.80</u>	
	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.					
	Case I	Using Concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3683.00	
		d) formwork @ 10 per cent of the cost of concrete				368.30	
		e) Overhead charges @ 20 % on (a+b+c+d)				810.26	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				486.16	
		Rate perm (a+b+c+d+e+f)				5347.72	
					say	<u>5347.70</u>	
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)				4288.00	
		d) formwork @ 10 per cent of the cost of concrete				428.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				943.36	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				566.02	
		Rate perm (a+b+c+d+e+f)				6226.18	
					say	<u>6226.20</u>	
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)				4529.00	
		d) formwork @ 10 per cent of the cost of concrete				452.90	
		e) Overhead charges @ 20 % on (a+b+c+d)				996.38	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				597.83	
		Rate perm (a+b+c+d+e+f)				6576.11	
					say	<u>6576.10</u>	
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)				4261.00	
		d) formwork @ 10 per cent of the cost of concrete				426.10	
		e) Overhead charges @ 20 % on (a+b+c+d)				937.42	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				562.45	
		Rate perm (a+b+c+d+e+f)				6186.97	
					say	<u>6186.95</u>	
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.					

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)				4565.00	
		d) formwork @ 10 per cent of the cost of concrete				456.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				1004.30	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				602.58	
		Rate perm (a+b+c+d+e+f)				6628.38	
					say	<u>6628.40</u>	
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)				4485.00	
		d) formwork @ 10 per cent of the cost of concrete				448.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				986.70	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				592.02	
		Rate perm (a+b+c+d+e+f)				6512.22	
					say	<u>6512.20</u>	
'12.11 B (v)		RCC M25 Grade					
		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)				4976.00	
		d) formwork @ 10 per cent of the cost of concrete				497.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				1094.72	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				656.83	
		Rate perm (a+b+c+d+e+f)				7225.15	
					say	<u>7225.15</u>	
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)				4789.00	
		d) formwork @ 10 per cent of the cost of concrete				478.90	
		e) Overhead charges @ 20 % on (a+b+c+d)				1053.58	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				632.15	
		Rate perm (a+b+c+d+e+f)				6953.63	
					say	<u>6953.65</u>	
'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)				4778.00	
		d) formwork @ 10 per cent of the cost of concrete				477.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				1051.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				630.70	
		Rate perm (a+b+c+d+e+f)				6937.66	
					say	<u>6937.65</u>	
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)				4528.00	
		d) formwork @ 10 per cent of the cost of concrete				452.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				996.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				597.70	
		Rate perm (a+b+c+d+e+f)				6574.66	
					say	<u>6574.65</u>	
'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)				5003.00	
		d) formwork @ 10 per cent of the cost of concrete				500.30	
		e) Overhead charges @ 20 % on (a+b+c+d)				1100.66	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				660.40	
		Rate perm (a+b+c+d+e+f)				7264.36	
					say	<u>7264.35</u>	
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)				4736.00	
		d) formwork @ 10 per cent of the cost of concrete				473.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				1041.92	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				625.15	
		Rate perm (a+b+c+d+e+f)				6876.67	
					say	<u>6876.65</u>	
'12.11 B	(viii)	RCC M35 Grade					
		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)				5125.00	
		d) formwork @ 10 per cent of the cost of concrete				512.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				1127.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				676.50	
		Rate perm (a+b+c+d+e+f)				7441.50	
					say	<u>7441.50</u>	
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)				4914.00	
		d) formwork @ 10 per cent of the cost of concrete				491.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				1081.08	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				648.65	
		Rate perm (a+b+c+d+e+f)				7135.13	
					say	<u>7135.15</u>	
'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	7989.00	412232.40	M-081
		Coarse Sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture	kg	206.00	50.00	10300.00	M-180
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Meson	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300xL	0.00	0.00	Lead= 0 , P&M-050
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		40064.00			
		d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery				60095.44	
		e) Overhead charges @ 20 % on (a+b+c+d)				132209.97	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				79325.98	
		cost of 120 cum = a+b+c+d+e+f				872585.79	
		Rate per cum = (a+b+c+d+e+f)/120				7271.55	
					say	<u>7271.55</u>	
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					
		Cement	tonne	5.55	7989.00	44338.95	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	5.40	594.00	3207.60	M-055
		20 mm Aggregate	cum	5.40	726.00	3920.40	M-053
		10 mm Aggregate	cum	2.70	1650.00	4455.00	M-051
		Admixture	Kg	18.60	50.00	930.00	M-180
		b) Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	354.00	2124.00	P&M-013
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4700.00			
		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..				3241.72	
		d) Overhead charges @ 20 % on (a+b+c)				14748.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8848.82	
		cost of 15 cum = a+b+c+d+e				97337.03	
		Rate per cum = (a+b+c+d+e)/15				6489.14	
					say	6489.15	
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	7989.00	354711.60	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture	Kg	148.80	50.00	7440.00	M-180
		b) Labour					
		Mate	day	0.88	250.00	220.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4505.00			
		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..				25044.98	
		d) Overhead charges @ 20 % on (a+b+c)				113125.72	
		e) Contractor's profit @ 10 % on (a+b+c+d)				67875.43	
		cost of 120 cum = a+b+c+d+e				746629.73	
		Rate per cum = (a+b+c+d+e)/120				6221.91	
					say	6221.90	
'12.11 C	(ii)	PCC Grade M25					
		Case I Using Concrete Mixer					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	tonne	5.99	7989.00	47854.11	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	5.40	594.00	3207.60	M-055
		20 mm Aggregate	cum	5.40	726.00	3920.40	M-053
		10 mm Aggregate	cum	2.70	1650.00	4455.00	M-051
		Admixture	Kg	21.60	50.00	1080.00	M-180
		b) Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	354.00	2124.00	P&M-013
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4945.00			
		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..				3424.98	
		d) Overhead charges @ 20 % on (a+b+c)				15517.72	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) Contractor's profit @ 10 % on (a+b+c+d)				9310.63	
		cost of 15 cum = a+b+c+d+e				102416.94	
		Rate per cum = (a+b+c+d+e)/15				6827.80	
					say	<u>6827.80</u>	
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	7989.00	382513.32	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture	Kg	172.80	50.00	8640.00	M-180
		b) Labour					
		Mate	day	0.88	250.00	220.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4747.00			
		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..				26495.07	
		d) Overhead charges @ 20 % on (a+b+c)				119216.08	
		e) Contractor's profit @ 10 % on (a+b+c+d)				71529.65	
		cost of 120 cum = a+b+c+d+e				786826.11	
		Rate per cum = (a+b+c+d+e)/120				6556.88	
					say	<u>6556.90</u>	
12.11 C (iii)		PCC Grade M30					
		Case I Using Concrete Mixer					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	tonne	6.08	7989.00	48573.12	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	5.40	594.00	3207.60	M-055
		20 mm Aggregate	cum	5.40	726.00	3920.40	M-053
		10 mm Aggregate	cum	2.70	1650.00	4455.00	M-051
		Admixture	Kg	21.60	50.00	1080.00	M-180
		b) Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	354.00	2124.00	P&M-013
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4993.00			
		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..				3460.93	
		d) Overhead charges @ 20 % on (a+b+c)				15668.71	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9401.23	
		cost of 15 cum = a+b+c+d+e				103413.49	
		Rate per cum = (a+b+c+d+e)/15				6894.23	
					say	<u>6894.25</u>	
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	7989.00	388584.96	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture	Kg	172.80	50.00	8640.00	M-180
		b) Labour					
		Mate	day	0.88	250.00	220.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		4798.00			
		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..				26798.65	
		d) Overhead charges @ 20 % on (a+b+c)				120491.12	
		e) Contractor's profit @ 10 % on (a+b+c+d)				72294.67	
		cost of 120 cum = a+b+c+d+e				795241.40	
		Rate per cum = (a+b+c+d+e)/120				6627.01	
					<i>say</i>	6627.00	
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	7989.00	50250.81	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm Aggregate	cum	5.40	594.00	3207.60	M-055
		20 mm Aggregate	cum	5.40	726.00	3920.40	M-053
		10 mm Aggregate	cum	2.70	1650.00	4455.00	M-051
		Admixture	Kg	21.60	50.00	1080.00	M-180
		b) Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	354.00	2124.00	P&M-013
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		5105.00			
		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..				3544.82	
		d) Overhead charges @ 20 % on (a+b+c)				16021.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9612.62	
		cost of 15 cum = a+b+c+d+e				105738.77	
		Rate per cum = (a+b+c+d+e)/15				7049.25	
					<i>say</i>	7049.25	
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	7989.00	401686.92	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture	Kg	172.80	50.00	8640.00	M-180
		b) Labour					
		Mate	day	0.88	250.00	220.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017

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	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		<i>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)</i>		<i>4907.00</i>			
		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..				27453.75	
		d) Overhead charges @ 20 % on (a+b+c)				123242.53	
		e) Contractor's profit @ 10 % on (a+b+c+d)				73945.52	
		cost of 120 cum = a+b+c+d+e				813400.72	
		Rate per cum = (a+b+c+d+e)/120				6778.34	
					<i>say</i>	<u>6778.35</u>	
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)				4700.00	
		d) Overhead charges @ 20 % on (a+b+c)				940.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				564.00	
		Rate per cum = (a+b+c+d+e)				6204.00	
					<i>say</i>	<u>6204.00</u>	
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)				4505.00	
		d) Overhead charges @ 20 % on (a+b+c)				901.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				540.60	
		Rate per cum = (a+b+c+d+e)				5946.60	
					<i>say</i>	<u>5946.60</u>	
'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)				4945.00	
		d) Overhead charges @ 20 % on (a+b+c)				989.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				593.40	
		Rate per cum = (a+b+c+d+e)				6527.40	
					<i>say</i>	<u>6527.40</u>	
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)				4747.00	
		d) Overhead charges @ 20 % on (a+b+c)				949.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				569.64	
		Rate per cum = (a+b+c+d+e)				6266.04	
					<i>say</i>	<u>6266.05</u>	
'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)				4993.00	
		d) Overhead charges @ 20 % on (a+b+c)				998.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				599.16	
		Rate per cum = (a+b+c+d+e)				6590.76	
					<i>say</i>	<u>6590.75</u>	
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)				4798.00	
		d) Overhead charges @ 20 % on (a+b+c)				959.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				575.76	
		Rate per cum = (a+b+c+d+e)				6333.36	
					<i>say</i>	<u>6333.35</u>	
12.11	E	Top plug					
	(i)	Grade M15 PCC					
		Same as Item 12.8(a) excluding formwork					
	Case I	Using Concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3683.00	
		d) Overhead charges @ 20 % on (a+b+c)				736.60	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) Contractor's profit @ 10 % on (a+b+c+d)				441.96	
		Rate per cum = (a+b+c+d+e)				4861.56	
					say	4861.55	
*12.11 E	(ii)	Grade M20 PCC					
		Same as Item 12.8(b) excluding formwork					
	Case I	Using Concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4288.00	
		d) Overhead charges @ 20 % on (a+b+c)				857.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				514.56	
		Rate per cum = (a+b+c+d+e)				5660.16	
					say	5660.15	
*12.11 E	(iii)	Grade M25 PCC					
		Same as Item 12.8 (d) excluding formwork					
	Case I	Using Concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4565.00	
		d) Overhead charges @ 20 % on (a+b+c)				913.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				547.80	
		Rate per cum = (a+b+c+d+e)				6025.80	
					say	6025.80	
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)				4485.00	
		d) Overhead charges @ 20 % on (a+b+c)				897.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				538.20	
		Rate per cum = (a+b+c+d+e)				5920.20	
					say	5920.20	
*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)				4778.00	
		d) Overhead charges @ 20 % on (a+b+c)				955.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				573.36	
		Rate per cum = (a+b+c+d+e)				6306.96	
					say	6306.95	
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)				4528.00	
		d) Overhead charges @ 20 % on (a+b+c)				905.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				543.36	
		Rate per cum = (a+b+c+d+e)				5976.96	
					say	5976.95	
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	7989.00	40903.68	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
	b)	Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Form Work @ 4 per cent. of a+b+c				2688.27	
		d) Overhead charges @ 20 % on (a+b+c)				13979.01	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8387.41	
		cost of 15 cum = a+b+c+d+e				92261.47	
		Rate per cum = (a+b+c+d+e)/15				6150.76	
					say	6150.75	
12.11 F	(i)	Case II Using 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	40.92	7989.00	326909.88	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader (capacity 1 cum)	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Formwork @ 4 per cent of (a+b+c)				20213.28	
		d) Overhead charges @ 20 % on (a+b+c)				105109.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				63065.42	
		cost of 120 cum = a+b+c+d+e				693719.60	
		Rate per cum = (a+b+c+d+e)/120				5781.00	
					<i>say</i>	<u>5781.00</u>	
12.11 F	(ii)	RCC Grade M25					
		Case I Using Concrete Mixer					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	6.05	7989.00	48333.45	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Form Work @ 3.75 per cent of a+b+c				2798.87	
		d) Overhead charges @ 20 % on (a+b+c)				15487.08	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9292.25	
		cost of 15 cum = a+b+c+d+e				102214.76	
		Rate per cum = (a+b+c+d+e)/15				6814.32	
					<i>say</i>	<u>6814.30</u>	
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	7989.00	386667.60	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader (capacity 1 cum)	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Formwork @ 3.75 per cent of (a+b+c)				21190.86	
		d) Overhead charges @ 20 % on (a+b+c)				117256.09	
		e) Contractor's profit @ 10 % on (a+b+c+d)				70353.66	
		cost of 120 cum = a+b+c+d+e				773890.21	
		Rate per cum = (a+b+c+d+e)/120				6449.09	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 F	(iii)	RCC Grade M30			say	6449.10	
	Case I	Using Concrete Mixer					
		Unit = cum					
		Taking output = 15 cum					
	a)	Material					
		Cement	tonne	6.10	7989.00	48732.90	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
	b)	Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Formwork @ 3.5 per cent of (a+b+c)				2626.26	
	d)	Overhead charges @ 20 % on (a+b+c)				15532.45	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				9319.47	
		cost of 15 cum = a+b+c+d+e				102514.18	
		Rate per cum = (a+b+c+d+e)/15				6834.28	
					say	6834.30	
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	7989.00	389783.31	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
	b)	Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader (capacity 1 cum)	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Formwork @ 3.5 per cent of (a+b+c)				19887.19	
	d)	Overhead charges @ 20 % on (a+b+c)				117618.50	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				70571.10	
		cost of 120 cum = a+b+c+d+e				776282.09	
		Rate per cum = (a+b+c+d+e)/120				6469.02	
					say	6469.00	
12.11 F	(iv)	RCC Grade M35					
	Case I	Using Concrete Mixer					
		Unit = cum					
		Taking output = 15 cum					
	a)	Material					
		Cement	tonne	6.33	7989.00	50570.37	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
	b)	Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Formwork @ 3 per cent of (a+b+c)				2306.20	
	d)	Overhead charges @ 20 % on (a+b+c)				15835.93	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				9501.56	
		cost of 15 cum = a+b+c+d+e				104517.17	
		Rate per cum = (a+b+c+d+e)/15				6967.81	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
					<i>say</i>	<u>6967.80</u>	
12.11 F	(iv)	Case II Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	tonne	50.64	7989.00	404562.96	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader (capacity 1 cum)	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Formwork @ 3 per cent of (a+b+c)				17489.55	
		d) Overhead charges @ 20 % on (a+b+c)				120094.90	
		e) Contractor's profit @ 10 % on (a+b+c+d)				72056.94	
		cost of 120 cum = a+b+c+d+e				792626.35	
		Rate per cum = (a+b+c+d+e)/120				6605.22	
					<i>say</i>	<u>6605.20</u>	
		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					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	tonne	52.20	7989.00	417025.80	M-081
		Coarse Sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture	kg	206.00	50.00	10300.00	M-180
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader 1 cum capacity	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	924.00	13860.00	P&M-049
		Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300.L	0.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				18172.43	
		d) Overhead charges @ 20 % on (a+b+c)				124784.05	
		e) Contractor's profit @ 10 % on (a+b+c+d)				74870.43	
		cost of 120 cum = a+b+c+d+e				823574.71	
		Rate per cum = (a+b+c+d+e)/120				6863.12	
					<i>say</i>	<u>6863.10</u>	
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 reckon					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		Diameter of well - 6 m.					
	A	Sandy Soil					
	(i)	Depth below bed level upto 3.0 M					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Rate of sinking = 0.50 m per hour.					
		a) Labour					
		Mate	day	0.12	250.00	30.00	L-12
		Sinker (skilled)	day	1.00	300.00	300.00	L-15
		Sinking helper (semi-skilled)	day	2.00	250.00	500.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	2.00	660.00	1320.00	P&M-075
		Consumables in sinking @10 per cent of (b)				132.00	
		c) Overhead charges @ 20 % on (a+b)				456.40	
		d) Contractor's profit @ 10 % on (a+b+c)				273.84	
		Rate per metre = (a+b+c+d)				3012.24	
					say	3012.25	
12.12 A	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking = 0.33 m per hour.					
		a) Labour					
		Mate	day	0.15	250.00	37.50	L-12
		Sinker	day	1.25	300.00	375.00	L-15
		Sinking helper (semi-skilled)	day	2.50	250.00	625.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	660.00	1980.00	P&M-075
		Consumables in sinking @10 per cent of (b)				198.00	
		c) Overhead charges @ 20 % on (a+b)				643.10	
		d) Contractor's profit @ 10 % on (a+b+c)				385.86	
		Rate per metre = (a+b+c+d)				4244.46	
					say	4244.45	
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%	4457.00			
		12th m	5%	4680.00			
		13th m	5%	4914.00			
		14th m	5%	5160.00			
		15th m	5%	5418.00			
		16th m	5%	5689.00			
		17th m	5%	5973.00			
		18th m	5%	6272.00			
		19th m	5%	6586.00			
		20th m	5%	6915.00			
		Total Cost from 10m upto 20m		56064.00			
		Avg Rate per metre		5606.00			
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.				Including 20% for Kentledge	
		21st m	7.5%	7434.00	8921.00		
		22nd m	7.5%	7992.00	9590.00		
		23rd m	7.5%	8591.00	10309.00		
		24th m	7.5%	9235.00	11082.00		
		25th m	7.5%	9928.00	11914.00		
		26th m	7.5%	10673.00	12808.00		
		27th m	7.5%	11473.00	13768.00		
		28th m	7.5%	12333.00	14800.00		
		29th m	7.5%	13258.00	15910.00		
		30th m	7.5%	14252.00	17102.00		
		Total Cost from 20m upto 30m		105169.00	126204.00		
		Avg Rate per metre		10517.00	12620.00		
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.				Including 20% for Kentledge	
		31st m	10%	15677.00	18812.00		
		32nd m	10%	17245.00	20694.00		
		33rd m	10%	18970.00	22764.00		
		34th m	10%	20867.00	25040.00		
		35th m	10%	22954.00	27545.00		
		36th m	10%	25249.00	30299.00		
		37th m	10%	27774.00	33329.00		
		38th m	10%	30551.00	36661.00		
		39th m	10%	33606.00	40327.00		
		40th m	10%	36967.00	44360.00		
		Total Cost from 30m upto 40m		249860.00	299831.00		

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Avg Rate per metre</i>		<u>24986.00</u>	<u>29983.00</u>		
12.12	B	Clayey Soil (6m dia. Well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 meter</i>					
	(i)	Depth below bed level upto 3.0 M					
		Rate of sinking = 0.33 m per hour.					
	a)	Labour					
		Mate	day	0.15	250.00	37.50	L-12
		Sinker (skilled)	day	1.50	300.00	450.00	L-15
		Sinking helper (semi-skilled)	day	2.25	250.00	562.50	L-14
	b)	Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	660.00	1980.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				198.00	
	c)	Overhead charges @ 20 % on (a+b)				645.60	
	d)	Contractor's profit @ 10 % on (a+b+c)				387.36	
		Rate per metre = (a+b+c+d)				4260.96	
					<i>say</i>	<u>4260.95</u>	
12.12 B	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking = 0.17 m per hour.					
	a)	Labour					
		Mate	day	0.30	250.00	75.00	L-12
		Sinker	day	3.00	300.00	900.00	L-15
		Sinking helper (semi-skilled)	day	4.50	250.00	1125.00	L-14
	b)	Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	2.00	517.00	1034.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				499.40	
	c)	Overhead charges @ 20 % on (a+b)				1518.68	
	d)	Contractor's profit @ 10 % on (a+b+c)				911.21	
		Rate per metre = (a+b+c+d)				10023.29	
					<i>say</i>	<u>10023.30</u>	
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.					Including for dewatering @ 5% of cost, if required
		11th m	5%	10524.00	11050.00		
		12th m	5%	11050.00	11603.00		
		13th m	5%	11603.00	12183.00		
		14th m	5%	12183.00	12792.00		
		15th m	5%	12792.00	13432.00		
		16th m	5%	13432.00	14104.00		
		17th m	5%	14104.00	14809.00		
		18th m	5%	14809.00	15549.00		
		19th m	5%	15549.00	16326.00		
		20th m	5%	16326.00	17142.00		
		Total Cost from 10m upto 20m		132372.00	138990.00		
		<i>Avg Rate per metre</i>		<u>13237.00</u>	<u>13899.00</u>		
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).					Including 25% for Kentledge Including 5% for dewatering, if required
		21st m	7.5%	17550.00	21938.00	23035.00	
		22nd m	7.5%	18866.00	23583.00	24762.00	
		23rd m	7.5%	20281.00	25351.00	26619.00	
		24th m	7.5%	21802.00	27253.00	28616.00	
		25th m	7.5%	23437.00	29296.00	30761.00	
		26th m	7.5%	25195.00	31494.00	33069.00	
		27th m	7.5%	27085.00	33856.00	35549.00	
		28th m	7.5%	29116.00	36395.00	38215.00	
		29th m	7.5%	31300.00	39125.00	41081.00	
		30th m	7.5%	33648.00	42060.00	44163.00	
		Total Cost from 20m upto 30m		248280.00	310351.00	325870.00	
		<i>Avg Rate per metre</i>		<u>24828.00</u>	<u>31035.00</u>	<u>32587.00</u>	
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					

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).			Including 20% for Kentledge	Including 5% for dewatering, if required	
		31st m	10%	37013.00	44416.00	46637.00	
		32nd	10%	40714.00	48857.00	51300.00	
		33rd m	10%	44785.00	53742.00	56429.00	
		34th m	10%	49264.00	59117.00	62073.00	
		35th m	10%	54190.00	65028.00	68279.00	
		36th m	10%	59609.00	71531.00	75108.00	
		37th m	10%	65570.00	78684.00	82618.00	
		38th m	10%	72127.00	86552.00	90880.00	
		39th m	10%	79340.00	95208.00	99968.00	
		40th m	10%	87274.00	104729.00	109965.00	
		Total Cost from 30m upto 40m		589886.00	707864.00	743257.00	
		<i>Avg Rate per metre</i>		<i>58989.00</i>	<i>70786.00</i>	<i>74326.00</i>	
12.12		C Soft Rock (6m dia well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		Depth in Soft rock strata up to 3m					
		Rate of sinking = 0.25 m per hour.					
		a) Labour					
		Mate	day	0.92	250.00	230.00	L-12
		Sinker (skilled)	day	3.00	300.00	900.00	L-15
		Sinking helper (semi-skilled)	day	20.00	250.00	5000.00	L-14
		Diver	day	0.50	300.00	150.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	660.00	2640.00	P&M-075
		Air compressor with pneumatic breakers	hour	3.50	517.00	1809.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				444.95	
		Add for dewatering @ of 5 per cent of (a+b), if required				558.72	
		c) Overhead charges @ 20 % on (a+b)				2346.63	
		d) Contractor's profit @ 10 % on (a+b+c)				1407.98	
		Rate per metre = (a+b+c+d)				15487.79	
					<i>say</i>	<i>15487.80</i>	
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	135.00	540.00	M-104
		Electric Detonators	each	18.00	9.00	162.00	M-094/100
		b) Labour					
		Mate	day	1.56	250.00	390.00	L-12
		Driller	day	2.00	250.00	500.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	12.00	200.00	2400.00	L-13
		Mazdoor (Skilled)	day	4.00	300.00	1200.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	517.00	1034.00	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				477.33	
		Consumables in sinking @ 10 per cent of cost of (b).				499.40	
		d) Overhead charges @ 20 % on (a+b+c)				2245.05	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1347.03	
		Rate per metre = (a+b+c+d+e)				14817.30	
					<i>say</i>	<i>14817.30</i>	
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 rock					
		<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	250.00	37.50	L-12
		Sinker (skilled)	day	1.25	300.00	375.00	L-15

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Sinking helper (semi-skilled)	day	2.50	250.00	625.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	3.25	660.00	2145.00	P&M-075
		Consumables in sinking @10 per cent of (b)				214.50	
		c) Overhead charges @ 20 % on (a+b)				679.40	
		d) Contractor's profit @ 10 % on (a+b+c)				339.70	
		Rate per metre = (a+b+c+d)				4416.10	
12.13 A	(ii)	Beyond 3m upto 10m depth				8832.20	
		Rate of sinking = 0.22 m per hour.			<i>say</i>	<u>8832.20</u>	
		a) Labour					
		Mate	day	0.18	250.00	45.00	L-12
		Sinker	day	1.50	300.00	450.00	L-15
		Sinking helper (semi-skilled)	day	3.00	250.00	750.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	660.00	2970.00	P&M-075
		Consumables in sinking @10 per cent of (b)				297.00	
		c) Overhead charges @ 20 % on (a+b)				902.40	
		d) Contractor's profit @ 10 % on (a+b+c)				541.44	
		Rate per metre = (a+b+c+d)				5955.84	
					<i>say</i>	<u>5955.85</u>	
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%	6254.00			
		12th m	5%	6567.00			
		13th m	5%	6895.00			
		14th m	5%	7240.00			
		15th m	5%	7602.00			
		16th m	5%	7982.00			
		17th m	5%	8381.00			
		18th m	5%	8800.00			
		19th m	5%	9240.00			
		20th m	5%	9702.00			
		Total Cost from 10m upto 20m		78663.00			
		Avg Rate per metre		<u>7866.00</u>			
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).				Including 20% for Kentledge	
		21st m	7.5%	10430.00	12516.00		
		22nd m	7.5%	11212.00	13454.00		
		23rd m	7.5%	12053.00	14464.00		
		24th m	7.5%	12957.00	15548.00		
		25th m	7.5%	13929.00	16715.00		
		26th m	7.5%	14974.00	17969.00		
		27th m	7.5%	16097.00	19316.00		
		28th m	7.5%	17304.00	20765.00		
		29th m	7.5%	18602.00	22322.00		
		30th m	7.5%	19997.00	23996.00		
		Total Cost from 20m upto 30m		147555.00	177065.00		
		Avg Rate per metre		<u>14756.00</u>	<u>17707.00</u>		
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.				Including 20% for Kentledge	
		31st m	10%	21997.00	26396.00		
		32nd m	10%	24197.00	29036.00		
		33rd m	10%	26617.00	31940.00		
		34th m	10%	29279.00	35135.00		
		35th m	10%	32207.00	38648.00		
		36th m	10%	35428.00	42514.00		
		37th m	10%	38971.00	46765.00		
		38th m	10%	42868.00	51442.00		
		39th m	10%	47155.00	56586.00		
		40th m	10%	51871.00	62245.00		
		Total Cost from 30m upto 40m		350590.00	420707.00		
		Avg Rate per metre		<u>35059.00</u>	<u>42071.00</u>		
12.13	B	Clayey Soil (7m dia. Well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 cum</i>					
	(i)	Depth below bed level upto 3.0 M					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Rate of sinking = 0.22 m per hour.					
		a) Labour					
		Mate	day	0.18	250.00	45.00	L-12
		Sinker (skilled)	day	1.50	300.00	450.00	L-15
		Sinking helper (semi-skilled)	day	3.00	250.00	750.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	660.00	2970.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				297.00	
		d) Overhead charges @ 20 % on (a+b)				902.40	
		e) Contractor's profit @ 10 % on (a+b+c)				541.44	
		Rate per metre = (a+b+c+d)				5955.84	
					say	<u>5955.85</u>	
12.13 B	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking = 0.17 m per hour.					
		a) Labour					
		Mate	day	0.26	250.00	65.00	L-12
		Sinker	day	2.00	300.00	600.00	L-15
		Sinking helper (semi-skilled)	day	4.00	250.00	1000.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.25	517.00	396.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				435.60	
		c) Overhead charges @ 20 % on (a+b)				1291.32	
		d) Contractor's profit @ 10 % on (a+b+c)				774.79	
		Rate per metre = (a+b+c+d)				8522.71	
					say	<u>8522.70</u>	
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.					Including for dewatering @ 5% of cost, if required
		11th m	5%	8949.00	9396.00		
		12th m	5%	9396.00	9866.00		
		13th m	5%	9866.00	10359.00		
		14th m	5%	10359.00	10877.00		
		15th m	5%	10877.00	11421.00		
		16th m	5%	11421.00	11992.00		
		17th m	5%	11992.00	12592.00		
		18th m	5%	12592.00	13222.00		
		19th m	5%	13222.00	13883.00		
		20th m	5%	13883.00	14577.00		
		Total Cost from 10m upto 20m		112557.00	118185.00		
		Avg Rate per metre		<u>11256.00</u>	<u>11819.00</u>		
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).					Including 25% for Kentledge
		31st m	7.5%	14924.00	18655.00	19588.00	Including 5% for dewatering, if required
		32nd	7.5%	16043.00	20054.00	21057.00	
		33rd m	7.5%	17246.00	21558.00	22636.00	
		34th m	7.5%	18539.00	23174.00	24333.00	
		35th m	7.5%	19929.00	24911.00	26157.00	
		36th m	7.5%	21424.00	26780.00	28119.00	
		37th m	7.5%	23031.00	28789.00	30228.00	
		38th m	7.5%	24758.00	30948.00	32495.00	
		39th m	7.5%	26615.00	33269.00	34932.00	
		40th m	7.5%	28611.00	35764.00	37552.00	
		Total Cost from 30m upto 40m		211120.00	263902.00	277097.00	
		Avg Rate per metre		<u>21112.00</u>	<u>26390.00</u>	<u>27710.00</u>	
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).					Including 20% for Kentledge
		31st m	10%	31472.00	37766.00	39654.00	Including 5% for dewatering, if required
		32nd	10%	34619.00	41543.00	43620.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		33rd m	10%	38081.00	45697.00	47982.00	
		34th m	10%	41889.00	50267.00	52780.00	
		35th m	10%	46078.00	55294.00	58059.00	
		36th m	10%	50686.00	60823.00	63864.00	
		37th m	10%	55755.00	66906.00	70251.00	
		38th m	10%	61331.00	73597.00	77277.00	
		39th m	10%	67464.00	80957.00	85005.00	
		40th m	10%	74210.00	89052.00	93505.00	
		Total Cost from 30m upto 40m		501585.00	601902.00	631997.00	
		<i>Avg Rate per metre</i>		<i>50159.00</i>	<i>60190.00</i>	<i>63200.00</i>	
12.13	C	Soft Rock (7m dia well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		Depth in soft rock strata upto 3m					
		Rate of sinking = 0.22 m per hour.					
		a) Labour					
		Mate	day	0.58	250.00	145.00	L-12
		Sinker (skilled)	day	4.00	300.00	1200.00	L-15
		Sinking helper (semi-skilled)	day	10.00	250.00	2500.00	L-14
		Diver	day	0.75	300.00	225.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	660.00	2970.00	P&M-075
		Air compressor with pneumatic breakers	hour	3.75	517.00	1938.75	P&M-063
		Consumables in sinking @ 10 per cent of (b)				490.88	
		Add for dewatering @ of 5 per cent of (a+b), if required				448.94	
		c) Overhead charges @ 20 % on (a+b)				1983.71	
		d) Contractor's profit @ 10 % on (a+b+c)				1190.23	
		Rate per metre = (a+b+c+d)				13092.50	
					<i>say</i>	<i>13092.50</i>	
12.13	D	Hard Rock (7m dia well)					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 1 m</i>					
		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	135.00	945.00	M-104
		Electric Detonators	each	30.00	9.00	270.00	M-094/100
		b) Labour					
		Mate	day	1.60	250.00	400.00	L-12
		Driller	day	2.00	250.00	500.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	18.00	200.00	3600.00	L-13
		Mazdoor (Skilled)	day	4.00	300.00	1200.00	L-15
		Diver	day	0.50	300.00	150.00	L-07
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	517.00	1034.00	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				545.33	
		Consumables in sinking @ 10 per cent of cost of (b).				553.93	
		d) Overhead charges @ 20 % on (a+b+c)				2644.15	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1586.49	
		Rate per metre = (a+b+c+d+e)				17451.40	
					<i>say</i>	<i>17451.40</i>	
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 reck					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		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	250.00	45.00	L-12
		Sinker (skilled)	day	1.50	300.00	450.00	L-15
		Sinking helper (semi-skilled)	day	3.00	250.00	750.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	660.00	2640.00	P&M-075

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Consumables in sinking @10 per cent of (b)				264.00	
		c) Overhead charges @ 20 % on (a+b)				829.80	
		d) Contractor's profit @ 10 % on (a+b+c)				497.88	
		Rate per metre = (a+b+c+d)				5476.68	
					say	<u>5476.70</u>	
12.14 A	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking @ 0.20 m/hour					
		a) Labour					
		Mate	day	0.25	250.00	62.50	L-12
		Sinker	day	1.75	300.00	525.00	L-15
		Sinking helper (semi-skilled)	day	3.50	250.00	875.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	660.00	3300.00	P&M-075
		Consumables in sinking @10 per cent of (b)				330.00	
		c) Overhead charges @ 20 % on (a+b)				1018.50	
		d) Contractor's profit @ 10 % on (a+b+c)				611.10	
		Rate per metre = (a+b+c+d)				6722.10	
					say	<u>6722.10</u>	
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%	7058.00			
		12th m	5%	7411.00			
		13th m	5%	7782.00			
		14th m	5%	8171.00			
		15th m	5%	8580.00			
		16th m	5%	9009.00			
		17th m	5%	9459.00			
		18th m	5%	9932.00			
		19th m	5%	10429.00			
		20th m	5%	10950.00			
		Total Cost from 10m upto 20m		88781.00			
		Avg Rate per metre		8878.00			
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.				Including 20% for Kentledge	
		21st m	7.5%	11771.00	14125.00		
		22nd m	7.5%	12654.00	15185.00		
		23rd m	7.5%	13603.00	16324.00		
		24th m	7.5%	14623.00	17548.00		
		25th m	7.5%	15720.00	18864.00		
		26th m	7.5%	16899.00	20279.00		
		27th m	7.5%	18166.00	21799.00		
		28th m	7.5%	19528.00	23434.00		
		29th m	7.5%	20993.00	25192.00		
		30th m	7.5%	22567.00	27080.00		
		Total Cost from 20m upto 30m		166524.00	199830.00		
		Avg Rate per metre		16652.00	19983.00		
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.				Including 20% for Kentledge	
		31st m	10%	24824.00	29789.00		
		32nd	10%	27306.00	32767.00		
		33rd m	10%	30037.00	36044.00		
		34th m	10%	33041.00	39649.00		
		35th m	10%	36345.00	43614.00		
		36th m	10%	39980.00	47976.00		
		37th m	10%	43978.00	52774.00		
		38th m	10%	48376.00	58051.00		
		39th m	10%	53214.00	63857.00		
		40th m	10%	58535.00	70242.00		
		Total Cost from 30m upto 40m		58535.00	70242.00		
		Avg Rate per metre		5854.00	7024.00		
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	250.00	55.00	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Sinker (skilled)	day	2.00	300.00	600.00	L-15
		Sinking helper (semi-skilled)	hour	3.50	250.00	875.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.		5.50	660.00	3630.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				363.00	
		c) Overhead charges @ 20 % on (a+b)				1104.60	
		d) Contractor's profit @ 10 % on (a+b+c)				662.76	
		Rate per metre = (a+b+c+d)				7290.36	
					<i>say</i>	<u>7290.35</u>	
12.14 B		(ii) Beyond 3m upto 10m depth					
		Rate of sinking @ 0.17 m/hour					
		a) Labour					
		Mate	day	0.32	250.00	80.00	L-12
		Sinker	day	2.50	300.00	750.00	L-15
		Sinking helper (semi-skilled)	day	4.50	250.00	1125.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.50	517.00	1809.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				576.95	
		c) Overhead charges @ 20 % on (a+b)				1660.29	
		d) Contractor's profit @ 10 % on (a+b+c)				996.17	
		Rate per metre = (a+b+c+d)				10957.91	
					<i>say</i>	<u>10957.90</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.					Including for dewatering @ 5% of cost, if required
		11th m	5%	11506.00	12081.00		
		12th m	5%	12081.00	12685.00		
		13th m	5%	12685.00	13319.00		
		14th m	5%	13319.00	13985.00		
		15th m	5%	13985.00	14684.00		
		16th m	5%	14684.00	15418.00		
		17th m	5%	15418.00	16189.00		
		18th m	5%	16189.00	16998.00		
		19th m	5%	16998.00	17848.00		
		20th m	5%	17848.00	18740.00		
		Total Cost from 10m upto 20m		144713.00	151947.00		
		<i>Avg Rate per metre</i>		<u>14471.00</u>	<u>15195.00</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).					Including 25% for Kentledge Including 5% for dewatering, if required
		31st m	7.5%	19187.00	23984.00	25183.00	
		32nd	7.5%	20626.00	25783.00	27072.00	
		33rd m	7.5%	22173.00	27716.00	29102.00	
		34th m	7.5%	23836.00	29795.00	31285.00	
		35th m	7.5%	25624.00	32030.00	33632.00	
		36th m	7.5%	27546.00	34433.00	36155.00	
		37th m	7.5%	29612.00	37015.00	38866.00	
		38th m	7.5%	31833.00	39791.00	41781.00	
		39th m	7.5%	34220.00	42775.00	44914.00	
		40th m	7.5%	36787.00	45984.00	48283.00	
		Total Cost from 30m upto 40m		271444.00	339306.00	356273.00	
		<i>Avg Rate per metre</i>		<u>27144.00</u>	<u>33931.00</u>	<u>35627.00</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					
		c Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).					Including 20% for Kentledge Including 5% for dewatering, if required
		31st m	10%	40466.00	48559.00	50987.00	
		32nd	10%	44513.00	53416.00	56087.00	
		33rd m	10%	48964.00	58757.00	61695.00	
		34th m	10%	53860.00	64632.00	67864.00	
		35th m	10%	59246.00	71095.00	74650.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		36th m	10%	65171.00	78205.00	82115.00	
		37th m	10%	71688.00	86026.00	90327.00	
		38th m	10%	78857.00	94628.00	99359.00	
		39th m	10%	86743.00	104092.00	109297.00	
		40th m	10%	95417.00	114500.00	120225.00	
		Total Cost from 30m upto 40m		644925.00	773910.00	812606.00	
		Avg Rate per metre		64493.00	77391.00	81261.00	
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	250.00	170.00	L-12
		Sinker (skilled)	day	4.00	300.00	1200.00	L-15
		Sinking helper (semi-skilled)	day	12.00	250.00	3000.00	L-14
		Diver	day	1.00	300.00	300.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	660.00	3300.00	P&M-075
		Air compressor with pneumatic breakers	hour	3.75	517.00	1938.75	P&M-063
		Consumables in sinking @ 10 per cent of (b)				523.88	
		Add for dewatering @ of 5 per cent of (a+b), if required				521.63	
		c) Overhead charges @ 20 % on (a+b)				2190.85	
		d) Contractor's profit @ 10 % on (a+b+c)				1314.51	
		Rate per metre = (a+b+c+d)				14459.62	
					say	14459.60	
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	135.00	1080.00	M-104
		Electric Detonators	each	32.00	9.00	288.00	M-094/100
		b) Labour					
		Mate	day	1.09	250.00	272.50	L-12
		Driller	day	2.00	250.00	500.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	20.00	200.00	4000.00	L-13
		Mazdoor (Skilled)	day	4.00	300.00	1200.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	517.00	1034.00	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				551.45	
		Consumables in sinking @ 10 per cent of cost of (b).				603.50	
		d) Overhead charges @ 20 % on (a+b+c)				2710.39	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1626.23	
		Rate per metre = (a+b+c+d+e)				17888.57	
					say	17888.55	
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 reck					
		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	250.00	47.50	L-12
		Sinker (skilled)	day	1.50	300.00	450.00	L-15
		Sinking helper (semi-skilled)	day	3.25	250.00	812.50	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	660.00	2640.00	P&M-075
		Consumables in sinking @10 per cent of (b)				264.00	
		c) Overhead charges @ 20 % on (a+b)				842.80	
		d) Contractor's profit @ 10 % on (a+b+c)				505.68	
		Rate per metre = (a+b+c+d)				5562.48	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
					<i>say</i>	<u>5562.50</u>	
12.15 A		(ii) Beyond 3m upto 10m depth					
		Rate of sinking @ 0.18 m/hour					
		a) Labour					
		Male	day	0.27	250.00	67.50	L-12
		Sinker	day	1.75	300.00	525.00	L-15
		Sinking helper (semi-skilled)	day	4.00	250.00	1000.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	660.00	3630.00	P&M-075
		Consumables in sinking @10 per cent of (b)				363.00	
		c) Overhead charges @ 20 % on (a+b)				1117.10	
		d) Contractor's profit @ 10 % on (a+b+c)				670.26	
		Rate per metre = (a+b+c+d)				7372.86	
					<i>say</i>	<u>7372.85</u>	
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%	7742.00			
		12th m	5%	8129.00			
		13th m	5%	8535.00			
		14th m	5%	8962.00			
		15th m	5%	9410.00			
		16th m	5%	9881.00			
		17th m	5%	10375.00			
		18th m	5%	10894.00			
		19th m	5%	11439.00			
		20th m	5%	12011.00			
		Total Cost from 10m upto 20m		97378.00			
		<i>Avg Rate per metre</i>		<u>9738.00</u>			
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					
		b Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.				Including 20% for Kentledge	
		21st m	7.5%	12911.83	15494.00		
		22nd m	7.5%	13880.00	16656.00		
		23rd m	7.5%	14921.00	17905.00		
		24th m	7.5%	16040.00	19248.00		
		25th m	7.5%	17243.00	20692.00		
		26th m	7.5%	18536.00	22243.00		
		27th m	7.5%	19926.00	23911.00		
		28th m	7.5%	21420.00	25704.00		
		29th m	7.5%	23027.00	27632.00		
		30th m	7.5%	24754.00	29705.00		
		Total Cost from 20m upto 30m		182658.83	219190.00		
		<i>Avg Rate per metre</i>		<u>18266.00</u>	<u>21919.00</u>		
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.				Including 20% for Kentledge	
		31st m	10%	27229.40	32675.00		
		32nd	10%	29952.00	35942.00		
		33rd m	10%	32947.00	39536.00		
		34th m	10%	36242.00	43490.00		
		35th m	10%	39866.00	47839.00		
		36th m	10%	43853.00	52624.00		
		37th m	10%	48238.00	57886.00		
		38th m	10%	53062.00	63674.00		
		39th m	10%	58368.00	70042.00		
		40th m	10%	64205.00	77046.00		
		Total Cost from 30m upto 40m		433962.40	520754.00		
		<i>Avg Rate per metre</i>		<u>43396.00</u>	<u>52075.00</u>		
12.15		B Clayey Soil (9m dia. Well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 cum</i>					
		(i) Depth below bed level upto 3.0 M					
		Rate of sinking 0.17 m / hour					
		a) Labour					
		Male	day	0.24	250.00	60.00	L-12
		Sinker (skilled)	day	2.25	300.00	675.00	L-15
		Sinking helper (semi-skilled)	day	3.75	250.00	937.50	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	5.75	660.00	3795.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				379.50	
		c) Overhead charges @ 20 % on (a+b)				1169.40	
		d) Contractor's profit @ 10 % on (a+b+c)				701.64	
		Rate per metre = (a+b+c+d)				7718.04	
					say	7718.05	
12.15 B		(ii) Beyond 3m upto 10m depth					
		Rate of sinking 0.15 m / hour					
		a) Labour					
		Male	day	0.34	250.00	85.00	L-12
		Sinker	day	2.50	300.00	750.00	L-15
		Sinking helper (semi-skilled)	day	5.00	250.00	1250.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	660.00	4290.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.75	517.00	1938.75	P&M-063
		Consumables in sinking @ 10 per cent of (b)				622.88	
		c) Overhead charges @ 20 % on (a+b)				1787.33	
		d) Contractor's profit @ 10 % on (a+b+c)				1072.40	
		Rate per metre = (a+b+c+d)				11796.35	
					say	11796.35	
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.				Including for dewatering @ 5% of cost, if required	
		11th m	5%	12386.00	13005.00		
		12th m	5%	13005.00	13655.00		
		13th m	5%	13655.00	14338.00		
		14th m	5%	14338.00	15055.00		
		15th m	5%	15055.00	15808.00		
		16th m	5%	15808.00	16598.00		
		17th m	5%	16598.00	17428.00		
		18th m	5%	17428.00	18299.00		
		19th m	5%	18299.00	19214.00		
		20th m	5%	19214.00	20175.00		
		Total Cost from 10m upto 20m		155786.00	163575.00		
		Avg Rate per metre		15579.00	16358.00		
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).				Including 25% for Kentledge	Including 5% for dewatering, if required
		31st m	7.5%	20655.00	25819.00	27110.00	
		32nd	7.5%	22204.00	27755.00	29143.00	
		33rd m	7.5%	23869.00	29836.00	31328.00	
		34th m	7.5%	25659.00	32074.00	33678.00	
		35th m	7.5%	27583.00	34479.00	36203.00	
		36th m	7.5%	29652.00	37065.00	38918.00	
		37th m	7.5%	31876.00	39845.00	41837.00	
		38th m	7.5%	34267.00	42834.00	44976.00	
		39th m	7.5%	36837.00	46046.00	48348.00	
		40th m	7.5%	39600.00	49500.00	51975.00	
		Total Cost from 30m upto 40m		292202.00	365253.00	383516.00	
		Avg Rate per metre		29220.00	36525.00	38352.00	
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).				Including 20% for Kentledge	Including 5% for dewatering, if required
		31st m	10%	43560.00	52272.00	54886.00	
		32nd	10%	47916.00	57499.00	60374.00	
		33rd m	10%	52708.00	63250.00	66413.00	
		34th m	10%	57979.00	69575.00	73054.00	
		35th m	10%	63777.00	76532.00	80359.00	
		36th m	10%	70155.00	84186.00	88395.00	
		37th m	10%	77171.00	92605.00	97235.00	
		38th m	10%	84888.00	101866.00	106959.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		39th m	10%	93377.00	112052.00	117655.00	
		40th m	10%	102715.00	123258.00	129421.00	
		Total Cost from 30m upto 40m		694246.00	833095.00	874751.00	
		Avg Rate per metre		69425.00	83310.00	87475.00	
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	250.00	190.00	L-12
		Sinker (skilled)	day	4.00	300.00	1200.00	L-15
		Sinking helper (semi-skilled)	day	14.00	250.00	3500.00	L-14
		Diver	day	1.20	300.00	360.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	660.00	4290.00	P&M-075
		Air compressor with pneumatic breakers	hour	4.00	517.00	2068.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				635.80	
		Add for dewatering @ of 5 per cent of (a+b), if required				1224.38	
		c) Overhead charges @ 20 % on (a+b)				2693.64	
		d) Contractor's profit @ 10 % on (a+b+c)				1616.18	
		Rate per metre = (a+b+c+d)				17778.00	
					say	17778.00	
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	135.00	1350.00	M-104
		Electric Detonators	each	40.00	9.00	360.00	M-094/100
		b) Labour					
		Mate	day	1.17	250.00	292.50	L-12
		Driller	day	2.00	250.00	500.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	22.00	200.00	4400.00	L-13
		Mazdoor (Skilled)	day	4.00	300.00	1200.00	L-15
		Diver	day	1.00	300.00	300.00	L-07
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	660.00	4620.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.50	517.00	1292.50	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				633.38	
		Consumables in sinking @ 10 per cent of cost of (b).				675.50	
		d) Overhead charges @ 20 % on (a+b+c)				3137.28	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1882.37	
		Rate per metre = (a+b+c+d+e)				20706.02	
					say	20706.00	
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 rec					
		Unit = Running Meter					
		Taking output = 1 m					
		Diameter of well - 10 m.					
	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	250.00	50.00	L-12
		Sinker (skilled)	day	1.50	300.00	450.00	L-15
		Sinking helper (semi-skilled)	day	3.50	250.00	875.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	660.00	3300.00	P&M-075
		Consumables in sinking @10 per cent of (b)				330.00	
		c) Overhead charges @ 20 % on (a+b)				1001.00	
		d) Contractor's profit @ 10 % on (a+b+c)				600.60	
		Rate per metre = (a+b+c+d)				6606.60	
					say	6606.60	
12.16 A	(ii)	Beyond 3m upto 10m depth					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Rate of sinking 0.17 m / hour					
		a) Labour					
		Male	day	0.31	250.00	77.50	L-12
		Sinker	day	2.00	300.00	600.00	L-15
		Sinking helper (semi-skilled)	day	4.25	250.00	1062.50	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	660.00	3795.00	P&M-075
		Consumables in sinking @10 per cent of (b)				379.50	
		c) Overhead charges @ 20 % on (a+b)				1182.90	
		d) Contractor's profit @ 10 % on (a+b+c)				709.74	
		Rate per metre = (a+b+c+d)				7807.14	
					say	7807.15	
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%	8197.00			
		12th m	5%	8607.00			
		13th m	5%	9037.00			
		14th m	5%	9489.00			
		15th m	5%	9963.00			
		16th m	5%	10461.00			
		17th m	5%	10984.00			
		18th m	5%	11533.00			
		19th m	5%	12110.00			
		20th m	5%	12716.00			
		Total Cost from 10m upto 20m		103097.00			
		Avg Rate per metre		10310.00			
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.				Including 20% for Kentledge	
		21st m	7.5%	13670.00	16404.00		
		22nd m	7.5%	14695.00	17634.00		
		23rd m	7.5%	15797.00	18956.00		
		24th m	7.5%	16982.00	20378.00		
		25th m	7.5%	18256.00	21907.00		
		26th m	7.5%	19625.00	23550.00		
		27th m	7.5%	21097.00	25316.00		
		28th m	7.5%	22679.00	27215.00		
		29th m	7.5%	24380.00	29256.00		
		30th m	7.5%	26209.00	31451.00		
		Total Cost from 20m upto 30m		193390.00	232067.00		
		Avg Rate per metre		19339.00	23207.00		
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.				Including 20% for Kentledge	
		31st m	10%	28830.00	34596.00		
		32nd	10%	31713.00	38056.00		
		33rd m	10%	34884.00	41861.00		
		34th m	10%	38372.00	46046.00		
		35th m	10%	42209.00	50651.00		
		36th m	10%	46430.00	55716.00		
		37th m	10%	51073.00	61288.00		
		38th m	10%	56180.00	67416.00		
		39th m	10%	61798.00	74158.00		
		40th m	10%	67978.00	81574.00		
		Total Cost from 30m upto 40m		459467.00	551362.00		
		Avg Rate per metre		45947.00	55136.00		
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					
		Male	day	0.25	250.00	62.50	L-12
		Sinker (skilled)	day	2.50	300.00	750.00	L-15
		Sinking helper (semi-skilled)	day	5.50	250.00	1375.00	L-14
	b)	Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				396.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Overhead charges @ 20 % on (a+b)				1308.70	
		d) Contractor's profit @ 10 % on (a+b+c)				785.22	
		Rate per metre = (a+b+c+d)				8637.42	
					say	8637.40	
12.16 B	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking 0.15m/hour.					
		a) Labour					
		Mate	day	0.40	250.00	100.00	L-12
		Sinker	day	3.00	300.00	900.00	L-15
		Sinking helper (semi-skilled)	day	5.50	250.00	1375.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.00	517.00	2068.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				602.80	
		c) Overhead charges @ 20 % on (a+b)				1801.16	
		d) Contractor's profit @ 10 % on (a+b+c)				1080.70	
		Rate per metre = (a+b+c+d)				11887.66	
					say	11887.65	
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.				Including for dewatering @ 5% of cost, if required	
		11th m	5%	12482.00	13106.00		
		12th m	5%	13106.00	13761.00		
		13th m	5%	13761.00	14449.00		
		14th m	5%	14449.00	15171.00		
		15th m	5%	15171.00	15930.00		
		16th m	5%	15930.00	16727.00		
		17th m	5%	16727.00	17563.00		
		18th m	5%	17563.00	18441.00		
		19th m	5%	18441.00	19363.00		
		20th m	5%	19363.00	20331.00		
		Total Cost from 10m upto 20m		156993.00	164842.00		
		Avg Rate per metre		15699.00	16484.00		
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).				Including 25% for Kentledge	Including 5% for dewatering, if required
		31st m	7.5%	20815.00	26019.00	27320.00	
		32nd	7.5%	22376.00	27970.00	29369.00	
		33rd m	7.5%	24054.00	30068.00	31571.00	
		34th m	7.5%	25858.00	32323.00	33939.00	
		35th m	7.5%	27797.00	34746.00	36483.00	
		36th m	7.5%	29882.00	37353.00	39221.00	
		37th m	7.5%	32123.00	40154.00	42162.00	
		38th m	7.5%	34532.00	43165.00	45323.00	
		39th m	7.5%	37122.00	46403.00	48723.00	
		40th m	7.5%	39906.00	49883.00	52377.00	
		Total Cost from 30m upto 40m		294465.00	368084.00	386488.00	
		Avg Rate per metre		29447.00	36808.00	38649.00	
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).				Including 20% for Kentledge	Including 5% for dewatering, if required
		31st m	10%	43897.00	52676.00	55310.00	
		32nd	10%	48287.00	57944.00	60841.00	
		33rd m	10%	53116.00	63739.00	66925.95	
		34th m	10%	58428.00	70114.00	73619.70	
		35th m	10%	64271.00	77125.00	80981.25	
		36th m	10%	70698.00	84838.00	89079.90	
		37th m	10%	77768.00	93322.00	97988.10	
		38th m	10%	85545.00	102654.00	107786.70	
		39th m	10%	94100.00	112920.00	118566.00	
		40th m	10%	103510.00	124212.00	130422.60	
		Total Cost from 30m upto 40m		699620.00	839544.00	881521.20	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Avg Rate per metre</i>		<u>69962.00</u>	<u>83954.00</u>	<u>88152.00</u>	
12.16	C	Soft Rock (10m dia well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		Depth in soft rock strata upto 3m					
		Rate of sinking 0.14m/hour.					
		a) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Sinker (skilled)	day	4.00	300.00	1200.00	L-15
		Sinking helper (semi-skilled)	day	16.00	250.00	4000.00	L-14
		Diver	day	1.40	300.00	420.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	660.00	4620.00	P&M-075
		Air compressor with pneumatic breakers	hour	4.25	517.00	2197.25	P&M-063
		Consumables in sinking @ 10 per cent of (b)				681.73	
		Add for dewatering @ 5 per cent of cost, if required				374.95	
		c) Overhead charges @ 20 % on (a+b)				2741.78	
		d) Contractor's profit @ 10 % on (a+b+c)				1645.07	
		Rate per metre = (a+b+c+d)				18095.78	
					<i>say</i>	<u>18095.80</u>	
12.16	D	Hard Rock (10m dia well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		Depth in hard rock strata upto 3 m					
		Rate of sinking 0.12 m/ hour.					
		a) Material					
		Gelatine 80 per cent	Kg	11.00	135.00	1485.00	M-104
		Electric Detonators	each.	44.00	9.00	396.00	M-094/100
		b) Labour					
		Mate	day	1.27	250.00	317.50	L-12
		Driller	day	2.00	250.00	500.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	24.00	200.00	4800.00	L-13
		Mazdoor (Skilled)	day	4.00	300.00	1200.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.50	660.00	5610.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	517.00	1551.00	P&M-063
		Dewatering @ 5 per cent of cost (c), if required.				358.05	
		Consumables in sinking @ 10 per cent of cost of (b+c).				1439.91	
		d) Overhead charges @ 20 % on (a+b+c)				3543.99	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2126.39	
		Rate per metre = (a+b+c+d+e)				23390.34	
					<i>say</i>	<u>23390.35</u>	
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 rec					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 0.50 m</i>					
		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	250.00	52.50	L-12
		Sinker (skilled)	day	1.50	300.00	450.00	L-15
		Sinking helper (semi-skilled)	day	3.30	250.00	825.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Consumables in sinking @10 per cent of (b)				396.00	
		d) Overhead charges @ 20 % on (a+b+c)				1136.70	
		e) Contractor's profit @ 10 % on (a+b+c+d)				682.02	
		Cost for 0.5m = a+b+c+d				7502.22	
		Rate per metre = (a+b+c+d)/0.50				15004.44	
					<i>say</i>	<u>15004.45</u>	
12.17 A	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking @ 0.13 m/hour					
		a) Labour					
		Mate	day	0.32	250.00	80.00	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Sinker	day	2.00	300.00	600.00	L-15
		Sinking helper (semi-skilled)	day	4.50	250.00	1125.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	660.00	2640.00	P&M-075
		Consumables in sinking @10 per cent of (b)				264.00	
		c) Overhead charges @ 20 % on (a+b+c)				941.80	
		d) Contractor's profit @ 10 % on (a+b+c+d)				565.08	
		Cost for 0.5m = a+b+c+d				6215.88	
		Rate per metre = (a+b+c+d)/0.50				12431.76	
					<i>say</i>	<u>12431.75</u>	
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%	13053.00			
		12th m	5%	13706.00			
		13th m	5%	14391.00			
		14th m	5%	15111.00			
		15th m	5%	15867.00			
		16th m	5%	16660.00			
		17th m	5%	17493.00			
		18th m	5%	18368.00			
		19th m	5%	19286.00			
		20th m	5%	20250.00			
		Total Cost from 10m upto 20m		164185.00			
		Avg Rate per metre		<u>16419.00</u>			
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.				Including 20% for Kentledge	
		21st m	7.5%	21769.00	26123.00		
		22nd m	7.5%	23402.00	28082.00		
		23rd m	7.5%	25157.00	30188.00		
		24th m	7.5%	27044.00	32453.00		
		25th m	7.5%	29072.00	34886.00		
		26th m	7.5%	31252.00	37502.00		
		27th m	7.5%	33596.00	40315.00		
		28th m	7.5%	36116.00	43339.00		
		29th m	7.5%	38825.00	46590.00		
		30th m	7.5%	41737.00	50084.00		
		Total Cost from 20m upto 30m		307970.00	369562.00		
		Avg Rate per metre		<u>30797.00</u>	<u>36956.00</u>		
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.				Including 20% for Kentledge	
		31st m	10%	45911.00	55093.00		
		32nd m	10%	50502.00	60602.00		
		33rd m	10%	55552.00	66662.00		
		34th m	10%	61107.00	73328.00		
		35th m	10%	67218.00	80662.00		
		36th m	10%	73940.00	88728.00		
		37th m	10%	81334.00	97601.00		
		38th m	10%	89467.00	107360.00		
		39th m	10%	98414.00	118097.00		
		40th m	10%	108255.00	129906.00		
		Total Cost from 30m upto 40m		731700.00	878039.00		
		Avg Rate per metre		<u>73170.00</u>	<u>87804.00</u>		
12.17		B Clayey Soil (11 m dia. Well)					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 0.50 meter</i>					
		(i) Depth from bed level upto 3.0 M					
		Rate of sinking @ 0.10 m/hour					
		a) Labour					
		Mate	day	0.26	250.00	65.00	L-12
		Sinker (skilled)	day	2.50	300.00	750.00	L-15
		Sinking helper (semi-skilled)	day	4.00	250.00	1000.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	660.00	3300.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				330.00	
		c) Overhead charges @ 20 % on (a+b)				1089.00	
		d) Contractor's profit @ 10 % on (a+b+c)				653.40	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cost for 0.5m = a+b+c+d				7187.40	
		Rate per metre = (a+b+c+d)/0.50				14374.80	
					say	<u>14374.80</u>	
12.17 B	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking @ 0.08 m/hour					
		a) Labour					
		Mate	day	0.43	250.00	107.50	L-12
		Sinker	day	3.50	300.00	1050.00	L-15
		Sinking helper (semi-skilled)	day	5.75	250.00	1437.50	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.25	517.00	2197.25	P&M-063
		Consumables in sinking @ 10 per cent of (b)				615.73	
		c) Overhead charges @ 20 % on (a+b)				1873.60	
		d) Contractor's profit @ 10 % on (a+b+c)				1124.16	
		Cost for 0.5m = a+b+c+d				12365.73	
		Rate per metre = (a+b+c+d)/0.50				24731.45	
					say	<u>24731.45</u>	
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.				Including for dewatering @ 5% of cost, if required	
		11th m	5%	25968.00	27266.00		
		12th m	5%	27266.00	28629.00		
		13th m	5%	28629.00	30060.00		
		14th m	5%	30060.00	31563.00		
		15th m	5%	31563.00	33141.00		
		16th m	5%	33141.00	34798.00		
		17th m	5%	34798.00	36538.00		
		18th m	5%	36538.00	38365.00		
		19th m	5%	38365.00	40283.00		
		20th m	5%	40283.00	42297.00		
		Total Cost from 10m upto 20m		326611.00	342942.00		
		Avg Rate per metre		<u>32661.00</u>	<u>34294.00</u>		
12.17 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).				Including 25% for Kentledge	Including 5% for dewatering, if required
		31st m	7.5%	43304.00	54130.00	56837.00	
		32nd	7.5%	46552.00	58190.00	61100.00	
		33rd m	7.5%	50043.00	62554.00	65682.00	
		34th m	7.5%	53796.00	67245.00	70607.00	
		35th m	7.5%	57831.00	72289.00	75903.00	
		36th m	7.5%	62168.00	77710.00	81596.00	
		37th m	7.5%	66831.00	83539.00	87716.00	
		38th m	7.5%	71843.00	89804.00	94294.00	
		39th m	7.5%	77231.00	96539.00	101366.00	
		40th m	7.5%	83023.00	103779.00	108968.00	
		Total Cost from 30m upto 40m		612622.00	765779.00	804068.00	
		Avg Rate per metre		<u>61262.00</u>	<u>76578.00</u>	<u>80407.00</u>	
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).				Including 20% for Kentledge	Including 5% for dewatering, if required
		31st m	10%	91325.00	109590.00	115070.00	
		32nd	10%	100458.00	120550.00	126578.00	
		33rd m	10%	110504.00	132605.00	139235.00	
		34th m	10%	121554.00	145865.00	151588.00	
		35th m	10%	133709.00	160451.00	168474.00	
		36th m	10%	147080.00	176496.00	185321.00	
		37th m	10%	161788.00	194146.00	203853.00	
		38th m	10%	177967.00	213560.00	224238.00	
		39th m	10%	195764.00	234917.00	246663.00	
		40th m	10%	215340.00	258408.00	271328.00	
		Total Cost from 30m upto 40m		1455489	1746588	1833918	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Avg Rate per metre</i>			<u>145549.00</u>	<u>174659.00</u>	<u>183392.00</u>
12.17		C Soft Rock (11m dia well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 0.50 m</i>					
		Depth in soft rock strata upto 3m					
		Rate of sinking @ 0.06 m/hour					
		a) Labour					
		Mate	day	0.95	250.00	237.50	L-12
		Sinker (skilled)	day	4.25	300.00	1275.00	L-15
		Sinking helper (semi-skilled)	day	18.00	250.00	4500.00	L-14
		Diver	day	1.50	300.00	450.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.00	660.00	5280.00	P&M-075
		Air compressor with pneumatic breakers	hour	4.50	517.00	2326.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				760.65	
		Add for dewatering @ 5 per cent of cost, if required				418.36	
		c) Overhead charges @ 20 % on (a+b)				3049.60	
		d) Contractor's profit @ 10 % on (a+b+c)				1829.76	
		Cost for 0.5m = a+b+c+d				20127.37	
		Rate per metre = (a+b+c+d)/0.50				40254.74	
						<i>say</i>	<u>40254.75</u>
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	135.00	1620.00	M-104
		Electric Detonators	each.	48.00	9.00	432.00	M-094/100
		b) Labour					
		Mate	day	1.35	250.00	337.50	L-12
		Driller	day	2.00	250.00	500.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	26.00	200.00	5200.00	L-13
		Mazdoor (Skilled)	day	4.00	300.00	1200.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	660.00	6600.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.50	517.00	1809.50	P&M-063
		Dewatering @ 5 per cent of cost (c), if required.				420.48	
		Consumables in sinking @ 10 per cent of cost of (b+c).				1570.95	
		d) Overhead charges @ 20 % on (a+b+c)				3950.59	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2370.35	
		Cost for 0.5m = a+b+c+d				26073.86	
		Rate per metre = (a+b+c+d)/0.50				52147.72	
						<i>say</i>	<u>52147.70</u>
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 rec					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 0.25 m</i>					
		Diameter of well - 12 m.					
		A Sandy Soil					
		(i) Depth below bed level upto 3.0 M					
		Rate of sinking @ 0.05 m/hour					
		a) Labour					
		Mate	day	0.22	250.00	55.00	L-12
		Sinker (skilled)	day	1.75	300.00	525.00	L-15
		Sinking helper (semi-skilled)	day	4.00	250.00	1000.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	660.00	3960.00	P&M-075
		Consumables in sinking @10 per cent of (b)				396.00	
		c) Overhead charges @ 20 % on (a+b)				1187.20	
		d) Contractor's profit @ 10 % on (a+b+c)				712.32	
		Cost for 0.25m = a+b+c+d				7835.52	
		Rate per metre = (a+b+c+d)/0.25				31342.08	
						<i>say</i>	<u>31342.10</u>
12.18 A		(ii) Beyond 3m upto 10m depth					
		Rate of sinking @ 0.038 m/hour					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.37	250.00	92.50	L-12
		Sinker	day	2.50	300.00	750.00	L-15
		Sinking helper (semi-skilled)	day	4.75	250.00	1187.50	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	660.00	4290.00	P&M-075
		Consumables in sinking @10 per cent of (b)				429.00	
		c) Overhead charges @ 20 % on (a+b)				1349.80	
		d) Contractor's profit @ 10 % on (a+b+c)				809.88	
		Cost for 0.25m = a+b+c+d				8908.68	
		Rate per metre = (a+b+c+d)/0.25				35634.72	
					say	<u>35634.70</u>	
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%	37416.00			
		12th m	5%	39287.00			
		13th m	5%	41251.35			
		14th m	5%	43313.92			
		15th m	5%	45479.61			
		16th m	5%	47753.59			
		17th m	5%	50141.27			
		18th m	5%	52648.34			
		19th m	5%	55280.75			
		20th m	5%	58044.79			
		Total Cost from 10m upto 20m		470616.63			
		<i>Avg Rate per metre</i>				<u>47062.00</u>	
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.				Including 20% for Kentledge	
		21st m	7.5%	62398.00	74878.00		
		22nd m	7.5%	67078.00	80494.00		
		23rd m	7.5%	72109.00	86531.00		
		24th m	7.5%	77517.00	93020.00		
		25th m	7.5%	83331.00	99997.00		
		26th m	7.5%	89581.00	107497.00		
		27th m	7.5%	96300.00	115560.00		
		28th m	7.5%	103523.00	124228.00		
		29th m	7.5%	111287.00	133544.00		
		30th m	7.5%	119634.00	143561.00		
		Total Cost from 20m upto 30m		882758.00	1059310.00		
		<i>Avg Rate per metre</i>				<u>88276.00</u>	<u>105931.00</u>
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.				Including 20% for Kentledge	
		31st m	10%	131597.00	157916.00		
		32nd	10%	144757.00	173708.00		
		33rd m	10%	159233.00	191080.00		
		34th m	10%	175156.00	210187.00		
		35th m	10%	192672.00	231206.00		
		36th m	10%	211939.00	254327.00		
		37th m	10%	233133.00	279760.00		
		38th m	10%	256446.00	307735.00		
		39th m	10%	282091.00	338509.00		
		40th m	10%	310300.00	372360.00		
		Total Cost from 30m upto 40m		2097324	2516788		
		<i>Avg Rate per metre</i>				<u>209732.00</u>	<u>251679.00</u>
12.18	B	Clayey Soil (12 m dia. Well)					
		<i>Unit = Running Meter.</i>					
		<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	250.00	75.00	L-12
		Sinker (skilled)	day	3.00	300.00	900.00	L-15
		Sinking helper (semi-skilled)	day	4.50	250.00	1125.00	L-14
	b)	Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	660.00	4125.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				412.50	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) Overhead charges @ 20 % on (a+b)				1327.50	
		d) Contractor's profit @ 10 % on (a+b+c)				796.50	
		Cost for 0.25m = a+b+c+d				8761.50	
		Rate per metre = (a+b+c+d)/0.25				35046.00	
					say	<u>35046.00</u>	
12.18 B	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking @ 0.03 m/hour					
		a) Labour					
		Mate	day	0.48	250.00	120.00	L-12
		Sinker	day	3.75	300.00	1125.00	L-15
		Sinking helper (semi-skilled)	day	6.00	250.00	1500.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	660.00	5497.80	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	517.00	2326.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				782.43	
		c) Overhead charges @ 20 % on (a+b)				2270.35	
		d) Contractor's profit @ 10 % on (a+b+c)				1362.21	
		Cost for 0.25m = a+b+c+d				14984.28	
		Rate per metre = (a+b+c+d)/0.25				59937.13	
					say	<u>59937.15</u>	
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.				Including for dewatering @ 5% of cost, if required	
		11th m	5%	62934.00	66081.00		
		12th m	5%	66081.00	69385.00		
		13th m	5%	69385.00	72854.00		
		14th m	5%	72854.00	76497.00		
		15th m	5%	76497.00	80322.00		
		16th m	5%	80322.00	84338.00		
		17th m	5%	84338.00	88555.00		
		18th m	5%	88555.00	92983.00		
		19th m	5%	92983.00	97632.00		
		20th m	5%	97632.00	102514.00		
		Total Cost from 10m upto 20m		791581.00	831161.00		
		Avg Rate per metre		<u>79158.00</u>	<u>83116.00</u>		
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).				Including 25% for Kentledge	Including 5% for dewatering, if required
		31st m	7.5%	104954.00	131193.00	137753.00	
		32nd	7.5%	112826.00	141033.00	148085.00	
		33rd m	7.5%	121288.00	151610.00	159191.00	
		34th m	7.5%	130385.00	162981.00	171130.00	
		35th m	7.5%	140164.00	175205.00	183965.00	
		36th m	7.5%	150676.00	188345.00	197762.00	
		37th m	7.5%	161977.00	202471.00	212595.00	
		38th m	7.5%	174125.00	217656.00	228539.00	
		39th m	7.5%	187184.00	233980.00	245679.00	
		40th m	7.5%	201223.00	251529.00	264105.00	
		Total Cost from 30m upto 40m		1484802	1856003	1948804	
		Avg Rate per metre		<u>148480.00</u>	<u>185600.00</u>	<u>194880.00</u>	
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).				Including 20% for Kentledge	Including 5% for dewatering, if required
		31st m	10%	221345.00	265614.00	278895.00	
		32nd	10%	243480.00	292176.00	306785.00	
		33rd m	10%	267828.00	321394.00	337464.00	
		34th m	10%	294611.00	353533.00	371210.00	
		35th m	10%	324072.00	388886.00	408330.00	
		36th m	10%	356479.00	427775.00	449164.00	
		37th m	10%	392127.00	470552.00	494080.00	
		38th m	10%	431340.00	517608.00	543488.00	
		39th m	10%	474474.00	569369.00	597837.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		40h m	10%	521921.00	626305.00	657620.00	
		Total Cost from 30m upto 40m		3527677	4233212	4444873	
		<i>Avg Rate per metre</i>		<i>352768.00</i>	<i>423321.00</i>	<i>444487.00</i>	
12.18	C	Soft Rock (12m dia well)					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 0.25 m</i>					
		Depth in soft rock strata upto 3m					
		Rate of sinking @ 0.025 m/hour					
		a) Labour					
		Mate	day	1.06	250.00	265.00	L-12
		Sinker (skilled)	day	4.50	300.00	1350.00	L-15
		Sinking helper (semi-skilled)	day	20.00	250.00	5000.00	L-14
		Diver	day	1.75	300.00	525.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	660.00	6600.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.75	517.00	2455.75	P&M-063
		Consumables in sinking @ 10 per cent of (b)				905.58	
		Add for dewatering @ 5 per cent, if required				498.07	
		c) Overhead charges @ 20 % on (a+b)				3519.88	
		d) Contractor's profit @ 10 % on (a+b+c)				2111.93	
		Cost for 0.25m = a+b+c+d				23231.20	
		Rate per metre = (a+b+c+d)/0.25				92924.79	
					say	<i>92924.80</i>	
12.18	D	Hard Rock (12m dia well)					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 0.25 m</i>					
		(i) Depth in hard rock strata upto 3 m					
		Rate of sinking @ 0.020 m/hour					
		a) Material					
		Gelatine 80 per cent	Kg	14.00	135.00	1890.00	M-104
		Electric detonator	each.	56.00	9.00	504.00	M-094/100
		b) Labour					
		Mate	day	1.44	250.00	360.00	L-12
		Driller	day	2.00	250.00	500.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	28.00	200.00	5600.00	L-13
		Mazdoor (Skilled)	day	4.50	300.00	1350.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	12.50	660.00	8250.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	4.00	517.00	2068.00	P&M-063
		Dewatering @ 5 per cent, if required.				515.90	
		Consumables in sinking @ 10 per cent of (c).				1083.39	
		d) Overhead charges @ 20 % on (a+b+c)				4436.76	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2662.05	
		Cost for 0.25m = a+b+c+d+e				29282.60	
		Rate per metre = (a+b+c+d+e)/0.25				117130.41	
					say	<i>117130.40</i>	
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 be					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 1 m</i>					
		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	250.00	50.00	L-12
		Sinker (skilled)	day	1.25	300.00	375.00	L-15
		Sinking helper (semi-skilled)	day	3.75	250.00	937.50	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	660.00	3630.00	P&M-075
		Consumables in sinking @10 per cent of (b)				363.00	
		c) Overhead charges @ 20 % on (a+b)				1071.10	
		d) Contractor's profit @ 10 % on (a+b+c)				642.66	
		Rate per metre = (a+b+c+d)				7069.26	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
					<i>say</i>	<u>7069.25</u>	
12.19 A		(ii) Beyond 3m upto 10m depth					
		Rate of sinking @ 0.17 m/hour					
		a) Labour					
		Male	day	0.30	250.00	75.00	L-12
		Sinker	day	1.50	300.00	450.00	L-15
		Sinking helper (semi-skilled)	day	4.00	250.00	1000.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.88	660.00	3880.80	P&M-075
		Consumables in sinking @10 per cent of (b)				388.08	
		c) Overhead charges @ 20 % on (a+b)				1158.78	
		d) Contractor's profit @ 10 % on (a+b+c)				695.27	
		Rate per metre = (a+b+c+d)				7647.92	
					<i>say</i>	<u>7647.90</u>	
12.19 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%	8030.00			
		12th m	5%	8432.00			
		13th m	5%	8854.00			
		14th m	5%	9297.00			
		15th m	5%	9762.00			
		16th m	5%	10250.00			
		17th m	5%	10763.00			
		18th m	5%	11301.00			
		19th m	5%	11866.00			
		20th m	5%	12459.00			
		Total Cost from 10m upto 20m		101014.00			
		<i>Avg Rate per metre</i>		<u>10101.00</u>			
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.				Including 20% for Kentledge	
		21st m	7.5%	13393.00		16072.00	
		22nd m	7.5%	14397.00		17276.00	
		23rd m	7.5%	15477.00		18572.00	
		24th m	7.5%	16638.00		19966.00	
		25th m	7.5%	17886.00		21463.00	
		26th m	7.5%	19227.00		23072.00	
		27th m	7.5%	20669.00		24803.00	
		28th m	7.5%	22219.00		26663.00	
		29th m	7.5%	23885.00		28662.00	
		30th m	7.5%	25676.00		30811.00	
		Total Cost from 20m upto 30m		189467.00		227360.00	
		<i>Avg Rate per metre</i>		<u>18947.00</u>		<u>22736.00</u>	
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.				Including 20% for Kentledge	
		31st m	10%	28244.00		33893.00	
		32nd	10%	31068.00		37282.00	
		33rd m	10%	34175.00		41010.00	
		34th m	10%	37593.00		45112.00	
		35th m	10%	41352.00		49622.00	
		36th m	10%	45487.00		54584.00	
		37th m	10%	50036.00		60043.00	
		38th m	10%	55040.00		66048.00	
		39th m	10%	60544.00		72653.00	
		40th m	10%	66598.00		79918.00	
		Total Cost from 30m upto 40m		450137.00		540165.00	
		<i>Avg Rate per metre</i>		<u>45014.00</u>		<u>54017.00</u>	
12.19		B Clayey Soil (Twin D Type Well)					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 1 meter</i>					
		(i) Depth below bed level upto 3.0 M					
		Rate of sinking @ 0.16 m/hour					
		a) Labour					
		Mate	day	0.26	250.00	65.00	L-12
		Sinker (skilled)	day	2.50	300.00	750.00	L-15
		Sinking helper (semi-skilled)	day	4.00	250.00	1000.00	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	660.00	4125.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				412.50	
		c) Overhead charges @ 20 % on (a+b)				1270.50	
		d) Contractor's profit @ 10 % on (a+b+c)				762.30	
		Rate per metre = (a+b+c+d)				8385.30	
					say	8385.30	
12.19 B		(ii) Beyond 3m upto 10m depth					
		Rate of sinking @ 0.15 m/hour					
		a) Labour					
		Male	day	0.45	250.00	112.50	L-12
		Sinker	day	3.25	300.00	975.00	L-15
		Sinking helper (semi-skilled)	day	6.00	250.00	1500.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.67	660.00	4402.20	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	517.00	2326.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				672.87	
		c) Overhead charges @ 20 % on (a+b)				1997.81	
		d) Contractor's profit @ 10 % on (a+b+c)				1198.69	
		Rate per metre = (a+b+c+d)				13185.57	
					say	13185.55	
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.				Including for dewatering @ 5% of cost, if required	
		11th m	5%	13845.00	14537.00		
		12th m	5%	14537.00	15264.00		
		13th m	5%	15264.00	16027.00		
		14th m	5%	16027.00	16828.00		
		15th m	5%	16828.00	17669.00		
		16th m	5%	17669.00	18552.00		
		17th m	5%	18552.00	19480.00		
		18th m	5%	19480.00	20454.00		
		19th m	5%	20454.00	21477.00		
		20th m	5%	21477.00	22551.00		
		Total Cost from 10m upto 20m		174133.00		182839.00	
		Avg Rate per metre		17413.00		18284.00	
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).				Including 25% for Kentledge	Including 5% for dewatering, if required
		31st m	7.5%	23088.00	28860.00		30303.00
		32nd	7.5%	24820.00	31025.00		32576.00
		33rd m	7.5%	26682.00	33353.00		35021.00
		34th m	7.5%	28683.00	35854.00		37647.00
		35th m	7.5%	30834.00	38543.00		40470.00
		36th m	7.5%	33147.00	41434.00		43506.00
		37th m	7.5%	35633.00	44541.00		46768.00
		38th m	7.5%	38305.00	47881.00		50275.00
		39th m	7.5%	41178.00	51473.00		54047.00
		40th m	7.5%	44266.00	55333.00		58100.00
		Total Cost from 30m upto 40m		326636.00		408297.00	428713.00
		Avg Rate per metre		32664.00		40830.00	42871.00
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).				Including 20% for Kentledge	Including 5% for dewatering, if required
		31st m	10%	48693.00	58432.00		61354.00
		32nd	10%	53562.00	64274.00		67488.00
		33rd m	10%	58918.00	70702.00		74237.00
		34th m	10%	64810.00	77772.00		81661.00
		35th m	10%	71291.00	85549.00		89826.00
		36th m	10%	78420.00	94104.00		98809.00
		37th m	10%	86262.00	103514.00		108690.00
		38th m	10%	94888.00	113866.00		119559.00

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		39th m	10%	104377.00	125252.00	131515.00	
		40th m	10%	114815.00	137778.00	144667.00	
		Total Cost from 30m upto 40m		776036.00	931243.00	977806.00	
		<i>Avg Rate per metre</i>		<i>77604.00</i>	<i>93124.00</i>	<i>97781.00</i>	
12.19	C	Soft Rock (Twin D Type Well)					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 1 m</i>					
		Depth in soft rock strata upto 3m					
		Rate of sinking @ 0.12 m/hour					
		a) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Sinker (skilled)	day	4.50	300.00	1350.00	L-15
		Sinking helper (semi-skilled)	day	15.00	250.00	3750.00	L-14
		Diver	day	1.50	300.00	450.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	660.00	5497.80	P&M-075
		Air compressor with pneumatic breakers	hour	6.00	517.00	3102.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				859.98	
		Add for dewatering @ 5 per cent, if required				472.99	
		c) Overhead charges @ 20 % on (a+b)				3139.55	
		d) Contractor's profit @ 10 % on (a+b+c)				1883.73	
		Rate per metre = (a+b+c+d)				20721.06	
					<i>say</i>	<i>20721.05</i>	
12.19	D	Hard Rock (Twin D Type Well)					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 1 m</i>					
		Depth in hard rock strata upto 3 m					
		Rate of sinking @ 0.10 m/hour					
		a) Material					
		Gelentine 80 per cent	Kg	10.00	135.00	1350.00	M-104
		Electric detonators	each.	40.00	9.00	360.00	M-094/100
		b) Labour					
		Mate	day	1.34	250.00	335.00	L-12
		Driller	day	2.00	250.00	500.00	L-06
		Blaster	day	0.25	250.00	62.50	L-03
		Mazdoor	day	25.00	200.00	5000.00	L-13
		Mazdoor (Skilled)	day	4.25	300.00	1275.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	660.00	6600.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	517.00	1551.00	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				766.18	
		Consumables in sinking @ 10 per cent of (b).				891.72	
		d) Overhead charges @ 20 % on (a+b+c)				3738.28	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2242.97	
		Rate per metre = (a+b+c+d+e)				24672.64	
					<i>say</i>	<i>24672.65</i>	
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,					
		<i>Unit - 1 cum</i>					
		<i>Taking output = 5 cum</i>					
		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	6605.20	52841.60	Item 12.8 (H)
		HYSD bar reinforcement in corbel	tonne	0.48	38219.00	18345.12	M-082
		Blasting material					
		Gelatine 80 per cent	Kg	1.50	135.00	202.50	M-104
		Electric detonators	each	6.00	9.00	54.00	M-094/100
		b) Labour					
		Medical Officer	day	0.50	250.00	125.00	L-16
		Para medical personnel	day	1.00	250.00	250.00	L-19
		Mate	day	1.86	250.00	465.00	L-12
		Driller	day	1.00	250.00	250.00	L-06
		Blaster	day	0.50	250.00	125.00	L-03
		Mazdoor (for cutting, blasting, cleaning, removal of Material etc.)	day	30.00	200.00	6000.00	L-13
		Mazdoor (Skilled) (for fixation and removal of adoper for air lock, carrying out mechanical and electrical operations and repairs and other skilled jobs.)	day	10.00	300.00	3000.00	L-15

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Diver	day	4.00	300.00	1200.00	L-07
		c) Machinery					
		(j) Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	6.00	input	#VALUE!	P&M-082
		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	4143.00	24858.00	P&M-038
		Air compressor 250 cfm, 2 nos.	hour	2 x 6	469.00	5628.00	P&M-001
		Hire and running charges of crane of 15 tonne capacity	hour	6.00	660.00	3960.00	P&M-072
		Motorised barge of 20 tonne capacity	hour	6.00	1650.00	9900.00	P&M-066
		Boat to carry atleast 20 persons	hour	6.00	1650.00	9900.00	P&M-066
		Electric generating set 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Tipper 10 tonne capacity	hour	6.00	554.00	3324.00	P&M-048
		d) Overhead charges @ 20 % on (a+b+c)				#VALUE!	
		e) Contractor's profit @ 10 % on (a+b+c+d)				#VALUE!	
		Cost for 5 cum = a+b+c+d+e (see notes below)					
		Rate per cum = (a+b+c+d+e)/5					
		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	490.00	588.00	M-006
		b) Labour					
		Mate	day	0.01	250.00	2.50	L-12
		Mazdoor	day	0.30	200.00	60.00	L-13
		c) Overhead charges @ 20 % on (a+b)				130.10	
		d) Contractor's profit @ 10 % on (a+b+c)				78.06	
		Rate per cum (a+b+c+d)				858.66	
					say	858.65	
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	45219.00	47479.95	M-179
		b) Labour					
		Mate	day	1.24	250.00	310.00	L-12
		Filter	day	6.00	300.00	1800.00	L-08
		Blacksmith	day	5.00	250.00	1250.00	L-01
		Welder	day	5.00	300.00	1500.00	L-02
		Mazdoor	day	10.00	200.00	2000.00	L-13
		Electrodes, cutting gas and other consumables @ 5 per cent on cost a (a) above.				2374.00	
		c) Overhead charges @ 20 % on (a+b)				11342.79	
		d) Contractor's profit @ 10 % on (a+b+c)				6805.67	
		Rate for per MT (a+b+c+d)				74862.41	
					say	74862.40	
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					
		Unit = meter					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Taking output = 15 m</i>					
		a) Materials					
		PCC Grade M35	cum	6.62	6778.35	44872.68	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	5429.00	32574.00	P&M-036
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	354.00	177.00	P&M-013
		Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
		Loader I cum bucket capacity.	hour	0.30	1139.00	341.70	P&M-017
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	554.00	166.20	P&M-048
		Bentonite	kg	300.00	2.25	675.00	M-071
		c) Labour					
		Mate/Supervisor	day	0.14	250.00	35.00	L-12
		Mazdoor	day	3.50	200.00	700.00	L-13
		d) Overhead charges @ 20 % on (b+c)				6933.78	
		e) Contractor's profit @ 10 % on (b+c+d)				4160.27	
		Cost for 15 m = a+b+c+d+e				90635.63	
		Rate per metre (a+b+c+d+e)/15				6042.38	
					say	<u>6042.20</u>	
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 <i>Unit = meter</i> <i>Taking output = 10 m</i>					
		a) Materials					
		PCC Grade M35	cum	7.85	6778.35	53210.05	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	5429.00	32574.00	P&M-036
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	354.00	177.00	P&M-013
		Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
		Loader I cum bucket capacity.	hour	0.40	1139.00	455.60	P&M-017
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.40	554.00	221.60	P&M-048
		Bentonite	kg	350.00	2.25	787.50	M-071
		c) Labour					
		Mate/Supervisor	day	0.16	250.00	40.00	L-12
		Mazdoor	day	4.00	200.00	800.00	L-13
		d) Overhead charges @ 20 % on (b+c)				7011.14	
		e) Contractor's profit @ 10 % on (b+c+d)				4206.68	
		Cost for 10 m = a+b+c+d+e				99483.57	
		Rate per metre (a+b+c+d+e)/10				9948.36	
					say	<u>9948.10</u>	
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 <i>Unit = meter</i> <i>Taking output = 9 m</i>					
		a) Materials					
		PCC Grade M35	cum	10.17	6778.35	68935.82	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	5429.00	32574.00	P&M-036
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	354.00	177.00	P&M-013
		Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Loader I cum bucket capacity.	hour	0.50	1139.00	569.50	P&M-017
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.50	554.00	277.00	P&M-048
		Bentonite	kg	385.00	2.25	866.25	M-071
		c) Labour					
		Mate/Supervisor	day	0.18	250.00	45.00	L-12
		Mazdoor	day	4.50	200.00	900.00	L-13
		d) Overhead charges @ 20 % on (b+c)				7081.75	
		e) Contractor's profit @ 10 % on (b+c+d)				4249.05	
		Cost for 9 m = a+b+c+d+d+e				115675.37	
		Rate per metre (a+b+c+d+e)/9				12852.82	
					<i>say</i>	12852.40	
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					
		<i>Unit = Running meter</i>					
		<i>Taking output = 40 metre</i>					
		a) Materials					
		PCC Grade M35	cum	17.66	6778.35	119705.66	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	50.00	8000.00	M-080
		ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	200.00	14000.00	M-124
		iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	165.00	8250.00	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	5429.00	32574.00	P&M-085
		Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	605.00	302.50	P&M-070
		d) Labour					
		Mate/Supervisor	day	0.12	250.00	30.00	L-12
		Mazdoor	day	3.00	200.00	600.00	L-13
		e) Overhead charges @ 20 % on (b+c+d)				12751.30	
		f) Contractor's profit @ 10 % on (b+c+d+e)				7650.78	
		Cost for 40 m = a+b+c+d+e				203864.24	
		Rate per metre (a+b+c+d+e)/40				5096.61	
					<i>say</i>	5096.45	
		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					
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	6778.35	159630.14	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	50.00	8000.00	M-080
		ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	200.00	14000.00	M-124
		iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	165.00	8250.00	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	5429.00	32574.00	P&M-085
		Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	605.00	302.50	P&M-070
		Hire and running charges for light crane for lowering reinforcement cage.	hour	0.50	354.00	177.00	P&M-013
		d) Labour					
		Mate/Supervisor	day	0.16	250.00	40.00	L-12
		Mazdoor	day	4.00	200.00	800.00	L-13
		e) Overhead charges @ 20 % on (b+c+d)				12828.70	
		f) Contractor's profit @ 10 % on (b+c+d+e)				7697.22	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cost for 30 m = a+b+c+d+e				244299.56	
		Rate per metre (a+b+c+d+e)/30				8143.32	
					say	8143.05	
		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					
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					
		Unit = Running meter					
		Taking output = 20 metre					
		a) Materials					
		PCC Grade M35	cum	22.61	6778.35	153258.49	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	50.00	8000.00	M-080
		ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	200.00	14000.00	M-124
		iii) Steel helmet on top of casing head during driving	Kg	50.00	165.00	8250.00	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	5429.00	32574.00	P&M-085
		Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	605.00	302.50	P&M-070
		d) Labour					
		Mate/Supervisor	day	0.18	250.00	45.00	L-12
		Mazdoor	day	4.50	200.00	900.00	L-13
		e) Overhead charges @ 20 % on (b+c+d)				12814.30	
		f) Contractor's profit @ 10 % on (b+c+d+e)				7688.58	
		Cost for 20 m = a+b+c+d+e				237832.87	
		Rate per metre (a+b+c+d+e)/20				11891.64	
					say	11891.25	
		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					
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		
		b) Lateral load test	tonne	1.00	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.					
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	7989.00	40903.68	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	250.00	375.00	L-10
		Mazdoor for concreting	day	20.00	200.00	4000.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	200.00	200.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator (capacity 33 KVA)	hour	6.00	370.00	2220.00	P&M-079

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2693.67	
		d) Overhead charges @ 20 % on (a+b+c)				14007.09	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8404.25	
		Cost for 15 cum = a+b+c+d+e				92446.80	
		Rate per metre (a+b+c+d+e)/15				6163.12	
					say	6163.10	
12.38A	(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
		a) Material					
		Cement	tonne	5.12	7989.00	40903.68	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-004
		20 mm Aggregate	cum	8.10	660.00	5346.00	M-053
		10 mm Aggregate	cum	5.40	1500.00	8100.00	M-051
		b) Labour					
		Mate	day	0.16	250.00	40.00	L-12
		Mason	day	0.38	250.00	95.00	L-10
		Mazdoor for concreting	day	2.50	200.00	500.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	200.00	200.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	0.75	2218.00	1663.50	P&M-002
		Generator 100 KVA	hour	0.75	693.00	519.75	P&M-080
		Loader (capacity 1 cum)	hour	0.75	1139.00	854.25	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Lead upto 1 Km	hour	2.00	924.00	1848.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	0.75	254.00	190.50	P&M-007
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2542.73	
		d) Overhead charges @ 20 % on (a+b+c)				13222.18	
		e) Contractor's profit @ 10 % on (a+b+c+d)				7933.31	
		Cost for 15 cum = a+b+c+d+e				87266.40	
		Rate per metre (a+b+c+d+e)/15				5817.76	
					say	5817.75	
	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	7989.00	47854.11	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	250.00	375.00	L-10
		Mazdoor for concreting	day	20.00	200.00	4000.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	200.00	200.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator (capacity 33 KVA)	hour	6.00	370.00	2220.00	P&M-079
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2971.69	
		d) Overhead charges @ 20 % on (a+b+c)				15452.78	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9271.67	
		Cost for 15 cum = a+b+c+d+e				101988.35	
		Rate per metre (a+b+c+d+e)/15				6799.22	
					say	6799.20	
12.38B	(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
		a) Material					
		Cement	tonne	5.99	7989.00	47854.11	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-004
		20 mm Aggregate	cum	8.10	660.00	5346.00	M-053
		10 mm Aggregate	cum	5.40	1500.00	8100.00	M-051
		b) Labour					
		Mate	day	0.16	250.00	40.00	L-12
		Mason	day	0.38	250.00	95.00	L-10
		Mazdoor for concreting	day	2.50	200.00	500.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	200.00	200.00	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.	
		c) Machinery						
		Batching Plant @ 20 cum/hour	hour	0.75	2218.00	1663.50	P&M-002	
		Generator 125 KVA	hour	0.75	715.00	536.25	P&M-018	
		Loader (capacity 1 cum)	hour	0.75	1139.00	854.25	P&M-017	
		Transit Mixer (capacity 4.0 cu.m)						
		Lead upto 1 Km	hour	2.00	924.00	1848.00	P&M-049	
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	0.00	0.00	Lead =0 km & P&M-050	
		Concrete Pump	hour	0.75	254.00	190.50	P&M-007	
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2821.40		
		d) Overhead charges @ 20 % on (a+b+c)				14671.30		
		e) Contractor's profit @ 10 % on (a+b+c+d)				8802.78		
		Cost for 15 cum = a+b+c+d+e				96830.60		
		Rate per metre (a+b+c+d+e)/15				6455.37		
					say	6455.35		
		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	7989.00	48732.90	M-081	
		Coarse sand	cum	6.75	490.00	3307.50	M-005	
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053	
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051	
		b) Labour						
		Mate	day	0.90	250.00	225.00	L-12	
		Mason	day	1.50	250.00	375.00	L-10	
		Mazdoor for concreting	day	20.00	200.00	4000.00	L-13	
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	200.00	200.00	L-13	
		c) Machinery						
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009	
		Generator (capacity 33 KVA)	hour	6.00	370.00	2220.00	P&M-079	
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3006.84		
		d) Overhead charges @ 20 % on (a+b+c)				15635.57		
		e) Contractor's profit @ 10 % on (a+b+c+d)				9381.34		
		Cost for 15 cum = a+b+c+d+e				103194.75		
		Rate per metre (a+b+c+d+e)/15				6879.65		
					say	6879.65		
*12.38C		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
		a) Material						
		Cement	tonne	6.10	7989.00	48732.90	M-081	
		Coarse sand	cum	6.75	490.00	3307.50	M-004	
		20 mm Aggregate	cum	8.10	660.00	5346.00	M-053	
		10 mm Aggregate	cum	5.40	1500.00	8100.00	M-051	
		b) Labour						
		Mate	day	0.16	250.00	40.00	L-12	
		Mason	day	0.38	250.00	95.00	L-10	
		Mazdoor for concreting	day	2.50	200.00	500.00	L-13	
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	200.00	200.00	L-13	
		c) Machinery						
		Batching Plant @ 20 cum/hour	hour	0.75	2218.00	1663.50	P&M-002	
		Generator 100 KVA	hour	0.75	693.00	519.75	P&M-080	
		Loader (capacity 1 cum)	hour	0.75	1139.00	854.25	P&M-017	
		Transit Mixer (capacity 4.0 cu.m)						
		Lead upto 1 Km	hour	2.00	924.00	1848.00	P&M-049	
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	0.00	0.00	Lead =0 km & P&M-050	
		Concrete Pump	hour	0.75	254.00	190.50	P&M-007	
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2855.90		
		d) Overhead charges @ 20 % on (a+b+c)				14850.66		
		e) Contractor's profit @ 10 % on (a+b+c+d)				8910.40		
		Cost for 15 cum = a+b+c+d+e				98014.35		
		Rate per metre (a+b+c+d+e)/15				6534.29		
					say	6534.30		
		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					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Taking output = 15 cum</i>					
	(i)	Using Concrete Mixer					
	a)	Material					
		Cement	tonne	6.33	7989.00	50570.37	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
	b)	Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	250.00	375.00	L-10
		Mazdoor	day	20.00	200.00	4000.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	200.00	200.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator (capacity 33 KVA)	hour	6.00	370.00	2220.00	P&M-079
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3080.34	
	d)	Overhead charges @ 20 % on (a+b+c)				16017.76	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				9610.66	
		Cost for 15 cum = a+b+c+d+e				105717.23	
		Rate per metre (a+b+c+d+e)/15				7047.82	
					<i>say</i>	7047.80	
12.38D	(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
	a)	Material					
		Cement	tonne	6.33	7989.00	50570.37	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-004
		20 mm Aggregate	cum	8.10	660.00	5346.00	M-053
		10 mm Aggregate	cum	5.40	1500.00	8100.00	M-051
	b)	Labour					
		Mate	day	0.16	250.00	40.00	L-12
		Mason	day	0.38	250.00	95.00	L-10
		Mazdoor for concreting	day	2.50	200.00	500.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	200.00	200.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	0.75	2218.00	1663.50	P&M-002
		Generator 125 KVA	hour	0.75	715.00	536.25	P&M-018
		Loader (capacity 1 cum)	hour	0.75	1139.00	854.25	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Lead upto 1 Km	hour	2.00	924.00	1848.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	0.75	254.00	190.50	P&M-007
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				2930.05	
	d)	Overhead charges @ 20 % on (a+b+c)				15236.28	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				9141.77	
		Cost for 15 cum = a+b+c+d+e				100559.48	
		Rate per metre (a+b+c+d+e)/15				6703.97	
					<i>say</i>	6703.95	
12.39	1100&17	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	7989.00	32994.57	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		40 mm aggregate	cum	8.10	594.00	4811.40	M-055
		20 mm Aggregate	cum	4.05	726.00	2940.30	M-053
		10 mm Aggregate	cum	1.35	1650.00	2227.50	M-051
	b)	Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	250.00	375.00	L-10
		Mazdoor	day	20.00	200.00	4000.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
	d)	Overhead charges @ 20 % on (a+b+c)				10882.25	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				6529.35	
		Cost for 15 cum = a+b+c+d+e				71822.88	
		Rate per metre (a+b+c+d+e)/15				4788.19	
					<i>say</i>	4788.20	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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					
		HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	38219.00	40129.95	M-082
		Binding wire	Kg	6.00	70.00	420.00	M-072
		b) Labour for cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.40	250.00	100.00	L-12
		Blacksmith	day	2.00	300.00	600.00	L-02
		Mazdoor	day	6.00	200.00	1200.00	L-13
						8489.99	
						5093.99	
						56033.93	
						<i>say</i>	<u>56033.95</u>
12.41	1600	Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification					
		<i>Unit = 1 MT</i>					
		<i>Taking output = 1 MT</i>					
		a) Material					
		MS bars including 5 per cent overlaps and wastage	tonne	1.05	38219.00	40129.95	M-126
		Binding wire	Kg	6.00	70.00	420.00	M-072
		b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.43	250.00	107.50	L-12
		Blacksmith	day	2.25	300.00	675.00	L-02
		Mazdoor	day	6.50	200.00	1300.00	L-13
		c) Overhead charges @ 20 % on (a+b)				8526.49	
		d) Contractor's profit @ 10 % on (a+b+c)				5115.89	
		Rate for per MT (a+b+c+d)				56274.83	
						<i>say</i>	<u>56274.85</u>

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	6.50	3250.00	M-079
		Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	0.24	4779.00	1146.96	Item 12.6 (A)
		b) Labour					
		Mate	day	0.06	250.00	15.00	L-12
		Mason	day	0.80	300.00	240.00	L-11
		Mazdoor	day	0.80	200.00	160.00	L-13
		Add for scaffolding @ 5 per cent of cost of material and labour				240.60	
		c) Overhead charges @ 20 % on (a+b)				1010.51	
		d) Contractor's profit @ 10 % on (a+b+c)				606.31	
		Rate per cum (a+b+c+d)				6669.38	
						<i>say</i>	<i>6669.40</i>
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	4779.00	143.37	Item 12.6 (A)
		b) Labour					
		Mate	day	0.04	250.00	10.00	L-12
		Mason	day	0.50	300.00	150.00	L-11
		Mazdoor	day	0.50	200.00	100.00	L-13
		c) Overhead charges @ 20 % on (a+b)				80.67	
		d) Contractor's profit @ 10 % on (a+b+c)				48.40	
		Rate per 10 sqm (a+b+c+d)				532.45	
						<i>say</i>	<i>53.20</i>
	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	4779.00	688.18	Item 12.6 (A)
		b) Labour					
		Mate	day	0.04	250.00	10.00	L-12
		Mason	day	0.50	300.00	150.00	L-11
		Mazdoor	day	0.50	200.00	100.00	L-13
		c) Overhead charges @ 20 % on (a+b)				189.64	
		d) Contractor's profit @ 10 % on (a+b+c)				113.78	
		Rate per 10 sqm (a+b+c+d)				1251.59	
						<i>say</i>	<i>125.20</i>
	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	470.00	470.00	M-148
		Through and bond stone	No	7.00	12.00	84.00	M-182
		(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
		Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	4779.00	1577.07	Item 12.6 (A)
		b) Labour					
		Mate	day	0.10	250.00	25.00	L-12
		Mason	day	1.20	300.00	360.00	L-11
		Mazdoor	day	1.20	200.00	240.00	L-13
		Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				137.80	
		c) Overhead charges @ 20 % on (a+b)				578.77	
		d) Contractor's profit @ 10 % on (a+b+c)				347.26	
		Rate per cum (a+b+c+d)				3819.91	
						<i>say</i>	<i>3819.90</i>
13.4	B	Coursed rubble masonry (first sort)					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Stone	cum	1.10	470.00	517.00	M-148
		Through and bond stone	each	7.00	12.00	84.00	M-182
		(7no.x0.24mx0.24mx0.39m = 0.16 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)	cum	0.30	4779.00	1433.70	Item 12.6 (A)
		b) Labour					
		Mate	day	0.12	250.00	30.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	1.50	200.00	300.00	L-13
		Add for scaffolding @ 5 per cent of cost of material and labour				140.74	
		c) Overhead charges @ 20 % on (a+b)				591.09	
		d) Contractor's profit @ 10 % on (a+b+c)				354.65	
		Rate per cum (a+b+c+d)				3901.17	
					say	3901.15	
13.4	C	Ashlar masonry (first sort)					
		Plain ashlar					
		Unit = cum					
		Taking output = 1 cum					
		a) Material					
		Stone	cum	1.11	470.00	521.70	M-169
		Through and bond stone	each	7.00	12.00	84.00	M-182
		(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
		Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	4779.00	1577.07	Item 12.6 (A)
		b) Labour for masonry work					
		Mate	day	0.20	250.00	50.00	L-12
		Mason	day	2.50	300.00	750.00	L-11
		Mazdoor	day	2.50	200.00	500.00	L-13
		Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				174.14	
		c) Overhead charges @ 20 % on (a+b)				731.38	
		d) Contractor's profit @ 10 % on (a+b+c)				438.83	
		Rate per cum (a+b+c+d)				4827.12	
					say	4827.10	
	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)				3683.00	Item 12.8 (A)
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		368.30	
		e) Overhead charges @ 20 % on (a+b+c+d)				810.26	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				486.16	
		Rate perm (a+b+c+d+e+f)				5347.72	
					say	5347.70	
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)				4288.00	Item 12.8 (B) i
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		428.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				943.36	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				566.02	
		Rate perm (a+b+c+d+e+f)				6226.18	
					say	6226.20	
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				4565.00	Item 12.8 (D)
		d) formwork					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		456.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				1004.30	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				602.58	
		Rate perm (a+b+c+d+e+f)				6628.38	
					say	6628.40	
13.5 C (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 (D) Case II				4485.00	Item 12.8 (D)
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		448.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				986.70	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				592.02	
		Rate perm (a+b+c+d+e+f)				6512.22	
					say	6512.20	
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 materi					
	Case I	Using concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				4565.00	Item 12.8 (D)
		d) formwork					
		Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		547.80	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		91.30	
		e) Overhead charges @ 20 % on (a+b+c+d)				1040.82	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				624.49	
		Rate perm (a+b+c+d+e+f)				6869.41	
					say	6869.40	
13.5 C (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 (D) Case II				4485.00	
		d) formwork					
		Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		538.20	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		89.70	
		e) Overhead charges @ 20 % on (a+b+c+d)				1022.58	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				613.55	
		Rate perm (a+b+c+d+e+f)				6749.03	
					say	6749.05	
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 materi					
	Case I	Using concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				4565.00	Item 12.8 (D)
		d) formwork					
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		684.75	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		182.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				1086.47	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				651.88	
		Rate perm (a+b+c+d+e+f)				7170.70	
					say	7171.70	
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				4485.00	Item 12.8 (D)
		d) formwork					
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		672.75	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		179.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				1067.43	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				640.46	
		Rate perm (a+b+c+d+e+f)				7045.04	
					say	7045.05	
13.5	D	PCC Grade M30					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(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				4778.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		477.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				1051.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				630.70	
		Rate perm (a+b+c+d+e+f)				6937.66	
					say	6937.65	
13.5 D		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 (F) Case II				4528.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		452.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				996.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				597.70	
		Rate perm (a+b+c+d+e+f)				6574.66	
					say	6574.65	
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 materi					
		Case I Using concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				4778.00	
		d) formwork					
		Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		573.36	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		95.56	
		e) Overhead charges @ 20 % on (a+b+c+d)				1089.38	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				653.63	
		Rate perm (a+b+c+d+e+f)				7189.93	
					say	7190.95	
13.5 D		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 (F) Case II				4528.00	
		d) formwork					
		Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		543.36	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		90.56	
		e) Overhead charges @ 20 % on (a+b+c+d)				1032.38	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				619.43	
		Rate perm (a+b+c+d+e+f)				6813.73	
					say	6813.75	
13.5 D		(r) Height above 10m					
		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 mater					
		Case I Using concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				4778.00	
		d) formwork					
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		716.70	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		191.12	
		e) Overhead charges @ 20 % on (a+b+c+d)				1137.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				682.30	
		Rate perm (a+b+c+d+e+f)				7505.28	
					say	7505.30	
13.5 D		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 (F) Case II				4528.00	
		d) formwork					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		679.20	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		181.12	
		e) Overhead charges @ 20 % on (a+b+c+d)				1077.66	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				646.60	
		Rate perm (a+b+c+d+e+f)				7112.58	
					say	7112.60	
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				4529.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		452.90	
		e) Overhead charges @ 20 % on (a+b+c+d)				996.38	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				597.83	
		Rate perm (a+b+c+d+e+f)				6576.11	
					say	6576.10	
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				4261.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		426.10	
		e) Overhead charges @ 20 % on (a+b+c+d)				937.42	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				562.45	
		Rate perm (a+b+c+d+e+f)				6186.97	
					say	6186.95	
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				4529.00	
		d) formwork					
		Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		543.48	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		90.58	
		e) Overhead charges @ 20 % on (a+b+c+d)				1032.61	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				619.57	
		Rate perm (a+b+c+d+e+f)				6815.24	
					say	6815.25	
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				4261.00	
		d) formwork					
		Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		511.32	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		85.22	
		e) Overhead charges @ 20 % on (a+b+c+d)				971.51	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				582.90	
		Rate perm (a+b+c+d+e+f)				6411.95	
					say	6411.95	
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,					
	Case I	Using concrete Mixer					
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				4529.00	
		d) formwork					
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		679.35	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		181.16	
		e) Overhead charges @ 20 % on (a+b+c+d)				1077.90	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				646.74	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Rate perm (a+b+c+d+e+f)				7114.15	
					say	<u>7114.15</u>	
13.5 E (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 (C) Case II				4261.00	
		d) formwork					
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		639.15	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		170.44	
		e) Overhead charges @ 20 % on (a+b+c+d)				1014.12	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				608.47	
		Rate perm (a+b+c+d+e+f)				6693.18	
					say	<u>6693.20</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				4976.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		497.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				1094.72	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				656.83	
		Rate perm (a+b+c+d+e+f)				7225.15	
					say	<u>7225.15</u>	
13.5 F (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 (E) Case II				4789.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		478.90	
		e) Overhead charges @ 20 % on (a+b+c+d)				1053.58	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				632.15	
		Rate perm (a+b+c+d+e+f)				6953.63	
					say	<u>6953.60</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				4976.00	
		d) formwork					
		Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.80		587.17	
		Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.80		89.57	
		e) Overhead charges @ 20 % on (a+b+c+d)				1130.55	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				678.33	
		Rate perm (a+b+c+d+e+f)				7461.61	
					say	<u>7461.60</u>	
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				4789.00	
		d) formwork					
		Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.80		565.10	
		Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.80		86.20	
		e) Overhead charges @ 20 % on (a+b+c+d)				1088.06	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				652.84	
		Rate perm (a+b+c+d+e+f)				7181.20	
					say	<u>7181.20</u>	
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				4976.00	
		d) formwork					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		746.40	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		199.04	
		e) Overhead charges @ 20 % on (a+b+c+d)				1184.29	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				710.57	
		Rate perm (a+b+c+d+e+f)				7816.30	
						<i>say</i> 7816.30	
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				4789.00	
		d) formwork					
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		718.35	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		191.56	
		e) Overhead charges @ 20 % on (a+b+c+d)				1139.78	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				683.87	
		Rate perm (a+b+c+d+e+f)				7522.56	
						<i>say</i> 7522.55	
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				5003.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		500.30	
		e) Overhead charges @ 20 % on (a+b+c+d)				1100.66	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				660.40	
		Rate perm (a+b+c+d+e+f)				7264.36	
						<i>say</i> 7264.35	
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				4736.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		473.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				1041.92	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				625.15	
		Rate perm (a+b+c+d+e+f)				6876.67	
						<i>say</i> 6876.65	
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				5003.00	
		d) formwork					
		Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.50		575.35	
		Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.60		80.05	
		e) Overhead charges @ 20 % on (a+b+c+d)				1131.68	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				679.01	
		Rate perm (a+b+c+d+e+f)				7469.08	
						<i>say</i> 7469.10	
13.5 G (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 (G) Case II				4736.00	
		d) formwork					
		Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.50		544.64	
		Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.60		75.78	
		e) Overhead charges @ 20 % on (a+b+c+d)				1071.28	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				642.77	
		Rate perm (a+b+c+d+e+f)				7070.47	
						<i>say</i> 7070.45	
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					

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 (G) Case I				5003.00	
		d) formwork					
		Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.00		700.42	
		Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.50		175.11	
		e) Overhead charges @ 20 % on (a+b+c+d)				1175.71	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				705.42	
		Rate perm (a+b+c+d+e+f)				7759.65	
							say 7759.65
13.5 G (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 (G) Case II				4736.00	
		d) formwork					
		Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.00		663.04	
		Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.50		165.76	
		e) Overhead charges @ 20 % on (a+b+c+d)				1112.96	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				667.78	
		Rate perm (a+b+c+d+e+f)				7345.54	
							say 7345.55
13.5		H (p) RCC Grade M35 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				5125.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		512.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				1127.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				676.50	
		Rate perm (a+b+c+d+e+f)				7441.50	
							say 7441.50
13.5 H (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 (H) Case II				4914.00	
		d) formwork					
		Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		491.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				1081.08	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				648.65	
		Rate perm (a+b+c+d+e+f)				7135.13	
							say 7135.15
13.5 H (q)		(q) Height 5m to 10m					
		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				5125.00	
		d) formwork					
		Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.00		563.75	
		Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.40		71.75	
		e) Overhead charges @ 20 % on (a+b+c+d)				1152.10	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				691.26	
		Rate perm (a+b+c+d+e+f)				7603.86	
							say 7603.85
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				4914.00	
		d) formwork					
		Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.00		540.54	
		Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.40		68.80	
		e) Overhead charges @ 20 % on (a+b+c+d)				1104.67	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				662.80	
		Rate perm (a+b+c+d+e+f)				7290.80	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
					say	<u>7290.80</u>	
13.5 H	(r)	Height above 10m					
		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				5125.00	
		d) formwork					
		Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.00		666.25	
		Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.00		153.75	
		e) Overhead charges @ 20 % on (a+b+c+d)				1189.00	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				713.40	
		Rate perm (a+b+c+d+e+f)				7847.40	
					say	<u>7847.40</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				4914.00	
		d) formwork					
		Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.00		638.82	
		Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.00		147.42	
		e) Overhead charges @ 20 % on (a+b+c+d)				1140.05	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				684.03	
		Rate perm (a+b+c+d+e+f)				7524.32	
					say	<u>7524.30</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					
		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 percent					
13.6	Section 1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications					
		Output: MT					
		Taking output = 1 MT					
		a) Material					
		HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	38219.00	40129.95	M-082
		Binding wire	kg	6.00	70.00	420.00	M-072
		b) Labour for cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.34	250.00	85.00	L-12
		Blacksmith	day	2.00	300.00	600.00	L-02
		Mazdoor	day	6.50	200.00	1300.00	L-13
		c) Overhead charges @ 20 % on (a+b)				8506.99	
		d) Contractor's profit @ 10 % on (a+b+c)				5104.19	
		Rate for per MT (a+b+c+d)				56146.13	
					say	<u>56146.15</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	38219.00	40129.95	M-126
		Binding wire	kg	6.00	70.00	420.00	M-072
		b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.28	250.00	70.00	L-12
		Blacksmith	day	1.50	300.00	450.00	L-02
		Mazdoor	day	5.50	200.00	1100.00	L-13
		c) Overhead charges @ 20 % on (a+b)				8433.99	
		d) Contractor's profit @ 10 % on (a+b+c)				5060.39	
		Rate for per MT (a+b+c+d)				55664.33	
					say	<u>55664.35</u>	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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					
		<i>Unit = Nos.</i>					
		<i>Taking output = 30 Nos.</i>					
		a) Material					
		AC pipe 100 mm dia. (including wastage @ 5 per cent.)	metre	31.50	28.00	882.00	M-056
		Average length of weep hole is taken as one metre for the purpose of estimating.					
		MS clamp	each.	30.00	50.00	1500.00	M-123
		collar for AC pipe (average) taking 10% of above pipe rate	each.	10.00	2.80	28.00	M-056/10
		Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.05	4779.00	238.95	Item 12.6 (A)
		b) Labour					
		Mate	day	0.03	250.00	7.50	L-12
		Mason	day	0.50	300.00	150.00	L-11
		Mazdoor	day	0.25	200.00	50.00	L-13
		c) Overhead charges @ 20 % on (a+b)				571.29	
		d) Contractor's profit @ 10 % on (a+b+c)				342.77	
		Cost for 30 m = a+b+c+d				3770.51	
		Rate per m (a+b+c+d)/30				125.68	
					<i>say</i>	<i>125.70</i>	
	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					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum</i>					
		A Granular material					
		a) Labour					
		Mate	day	0.28	250.00	70.00	L-12
		Mazdoor	day	7.00	200.00	1400.00	L-13
		b) Material					
		Granular material	cum	12.00	340.00	4080.00	M-009
		c) Machinery					
		Plate compactor/power rammer	hour	2.50	275.00	687.50	P&M-086
		Water Tanker	hour	0.05	444.00	22.20	P&M-060
		d) Overhead charges @ 20 % on (a+b+c)				1251.94	
		e) Contractor's profit @ 10 % on (a+b+c+d)				751.16	
		Cost for 10 cum of granular backfill = a+b+c+d+e				8262.80	
		Rate per cum = (a+b+c+d+e)/10				826.28	
					<i>say</i>	<i>826.30</i>	
13.9		B Sandy material					
		a) Labour					
		Mate	day	0.28	250.00	70.00	L-12
		Mazdoor for filling, watering, ramming etc.	day	7.00	200.00	1400.00	L-13
		b) Material					
		Sand	cum	12.00	490.00	5880.00	M-006
		c) Machinery					
		Plate compactor/power rammer	hour	2.50	275.00	687.50	P&M-086
		Water Tanker	hour	0.06	444.00	26.64	P&M-060
		d) Overhead charges @ 20 % on (a+b+c)				1612.83	
		e) Contractor's profit @ 10 % on (a+b+c+d)				967.70	
		Cost for 10 cum of sandy backfill = a+b+c+d+e				10644.66	
		Rate per cum = (a+b+c+d+e)/10				1064.47	
					<i>say</i>	<i>1064.45</i>	
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 si					
		<i>Unit = cum</i>					
		<i>Taking output = 10 cum.</i>					
		a) Labour					
		Mate	day	0.32	250.00	80.00	L-12
		Mazdoor for filling, watering, ramming etc.	day	7.00	200.00	1400.00	L-13

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor (Skilled)	day	1.00	300.00	300.00	L-15
		b) Material					
		Filler media of stone aggregate conforming to clause 2504.2.2. of MoRTH specifications.	cum	12.00	957.00	11484.00	M-012
		c) Machinery					
		Water Tanker of 6 KL capacity	hour	0.06	444.00	26.64	P&M-060
		d) Overhead charges @ 20 % on (a+b+c)				2658.13	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1594.88	
		cost for 10 cum of Filer Media = a+b+c+d+e				17543.64	
		Rate per cum = (a+b+c+d+e)/10				1754.36	
					say	<u>1754.35</u>	
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	250.00	15.00	L-12
		Mazdoor (Skilled)	day	0.50	300.00	150.00	L-15
		Mazdoor	day	1.00	200.00	200.00	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	275000.00	275000.00	M-065
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				2750.00	
		c) Overhead charges @ 20 % on (a+b)				55623.00	
		d) Contractor's profit @ 10 % on (a+b+c)				33373.80	
		cost for 250 tonnes capacity bearing = a+b+c+d				367111.80	
		Rate per tonne capacity = (a+b+c+d)/250				1468.45	
					say	<u>1468.45</u>	
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	250.00	15.00	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	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	242000.00	242000.00	M-067
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				2420.00	
		c) Overhead charges @ 20 % on (a+b)				48957.00	
		d) Contractor's profit @ 10 % on (a+b+c)				29374.20	
		cost for 250 tonnes capacity bearing = a+b+c+d				323116.20	
		Rate per tonne capacity = (a+b+c+d)/250				1292.46	
					say	<u>1292.45</u>	
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) Unit: one tonne capacity Considering a 80 tonne capacity bearing for this analysis					
		a) Labour					
		Mate	day	0.06	250.00	15.00	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	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	165000.00	165000.00	M-069
		Add 1 per cent for foundation anchorage bolts and consumables.				1650.00	
		c) Overhead charges @ 20 % on (a+b)				33403.00	
		d) Contractor's profit @ 10 % on (a+b+c)				20041.80	
		cost for 80 tonnes capacity bearing = a+b+c+d				220459.80	
		Rate per tonne capacity = (a+b+c+d)/80				2755.75	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
					<i>say</i>	<u>2755.75</u>	
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	250.00	15.00	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	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.	each.	1.00	13200.00	13200.00	M-066
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				132.00	
		c) Overhead charges @ 20 % on (a+b)				2739.40	
		d) Contractor's profit @ 10 % on (a+b+c)				1643.64	
		cost for 19200cc of elastomeric bearing = a+b+c+d				18080.04	
		Rate per cc of elastomeric bearing = (a+b+c+d)/19200				0.94	
					<i>say</i>	<u>0.95</u>	
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	250.00	10.00	L-12
		Mazdoor	day	0.75	200.00	150.00	L-13
		Mazdoor (Skilled)	day	0.35	300.00	105.00	L-15
		b) Material					
		Supply of sliding plate bearing of 80 tonne design capacity complete as per drawings and Technical Specifications.	each.	1.00	13200.00	13200.00	M-070
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				132.00	
		c) Overhead charges @ 20 % on (a+b)				2719.40	
		d) Contractor's profit @ 10 % on (a+b+c)				1631.64	
		cost for 80 tonnes of capacity bearing = a+b+c+d				17948.04	
						224.35	
					<i>say</i>	<u>224.35</u>	
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					
		Unit: one tonne capacity				387.20	
		Considering a Pot bearing assembly of 250 tonne capacity for this analysis.					
		a) Labour					
		Mate	day	0.08	250.00	20.00	L-12
		Mazdoor	day	1.50	200.00	300.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	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	each.	1.00	55000.00	55000.00	M-068
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				550.00	
		c) Overhead charges @ 20 % on (a+b)				11204.00	
		d) Contractor's profit @ 10 % on (a+b+c)				6722.40	
		cost for 250 tonnes capacity bearing = a+b+c+d				73946.40	
		Rate per tonne capacity = (a+b+c+d)/250				295.79	
					<i>say</i>	<u>295.80</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					
			<i>Unit = 1 cum</i>					
			<i>Taking output = 15 cum</i>					
			a) Material					
			Cement	tonne	5.12	7989.00	40903.68	M-081
			Coarse sand	cum	6.75	490.00	3307.50	M-005
			20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
			10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
			b) Labour					
			Mate	day	0.86	250.00	215.00	L-12
			Mason	day	1.50	300.00	450.00	L-11
			Mazdoor	day	20.00	200.00	4000.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
			Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
			<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum</i>		67207.00			
			For formwork and staging add the following:					
14.1A		(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
Case I		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				67207.00	
			d) Formwork and staging 20 per cent of (a+b+c)				13441.40	
			e) Overhead charges @ 20 % on (a+b+c+d)				16129.68	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				9677.81	
			Cost for 15 cum = a+b+c+d+e+f				106455.89	
			Rate per cum = (a+b+c+d+e+f)/15				7097.06	
						say	<u>7097.05</u>	
14.1A		(q)	Height 5m to 10m					
Case I (i)			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				67207.00	
			d) Formwork and staging 25 per cent of (a+b+c)				16801.75	
			e) Overhead charges @ 20 % on (a+b+c+d)				16801.75	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				10081.05	
			Cost for 15 cum = a+b+c+d+e+f				110891.55	
			Rate per cum = (a+b+c+d+e+f)/15				7392.77	
						say	<u>7392.75</u>	
14.1A		(r)	Height above 10m					
Case I (i)			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				67207.00	
			d) Formwork and staging 30 per cent of (a+b+c)				20162.10	
			e) Overhead charges @ 20 % on (a+b+c+d)				17473.82	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				10484.29	
			Cost for 15 cum = a+b+c+d+e+f				115327.21	
			Rate per cum = (a+b+c+d+e+f)/15				7688.48	
						say	<u>7688.50</u>	
14.1A		(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
Case I		(p)	Height upto 5m					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				67207.00	
			d) Formwork and staging 25 per cent of (a+b+c)				16801.75	
			e) Overhead charges @ 20 % on (a+b+c+d)				16801.75	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				10081.05	
			Cost for 15 cum = a+b+c+d+e+f				110891.55	
			Rate per cum = (a+b+c+d+e+f)/15				7392.77	
						say	<u>7392.75</u>	
14.1A		(q)	Height 5m to 10m					
Case I (ii)			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				67207.00	
			d) Formwork and staging 30 per cent of (a+b+c)				20162.10	
			e) Overhead charges @ 20 % on (a+b+c+d)				17473.82	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				10484.29	
			Cost for 15 cum = a+b+c+d+e+f				115327.21	
			Rate per cum = (a+b+c+d+e+f)/15				7688.48	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1A Case I (ii)	(i)	Height above 10m			say	<u>7688.50</u>	
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				67207.00	
		d) Formwork and staging 35 per cent of (a+b+c)				23522.45	
		e) Overhead charges @ 20 % on (a+b+c+d)				18145.89	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				10887.53	
		Cost for 15 cum = a+b+c+d+e+f				119762.87	
		Rate per cum = (a+b+c+d+e+f)/15				7984.19	
					say	<u>7984.20</u>	
14.1A	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	lonne	40.92	7989.00	326909.88	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		505332.00			
		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				505332.00	
		d) Formwork and staging 20 per cent of (a+b+c)				101066.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				121279.68	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				72767.81	
		Cost for 120 cum = a+b+c+d+e+f				800445.89	
		Rate per cum = (a+b+c+d+e+f)/120				6670.38	
					say	<u>6670.40</u>	
14.1A Case II (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				505332.00	
		d) Formwork and staging 25 per cent of (a+b+c)				126333.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				126333.00	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				75799.80	
		Cost for 120 cum = a+b+c+d+e+f				833797.80	
		Rate per cum = (a+b+c+d+e+f)/120				6948.32	
					say	<u>6948.30</u>	
14.1A Case II (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				505332.00	
		d) Formwork and staging 30 per cent of (a+b+c)				151599.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				131386.32	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				78831.79	
		Cost for 120 cum = a+b+c+d+e+f				867149.71	
		Rate per cum = (a+b+c+d+e+f)/120				7226.25	
					say	<u>7226.25</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				505332.00	
		d) Formwork and staging 25 per cent of (a+b+c)				126333.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				126333.00	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				75799.80	
		Cost for 120 cum = a+b+c+d+e+f				833797.80	
		Rate per cum = (a+b+c+d+e+f)/120				6948.32	
					say	6948.30	
14.1A Case II (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				505332.00	
		d) Formwork and staging 30 per cent of (a+b+c)				151599.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				131386.32	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				78831.79	
		Cost for 120 cum = a+b+c+d+e+f				867149.71	
		Rate per cum = (a+b+c+d+e+f)/120				7226.25	
					say	7226.25	
14.1A Case II (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				505332.00	
		d) Formwork and staging 35 per cent of (a+b+c)				176866.20	
		e) Overhead charges @ 20 % on (a+b+c+d)				136439.64	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				81863.78	
		Cost for 120 cum = a+b+c+d+e+f				900501.62	
		Rate per cum = (a+b+c+d+e+f)/120				7504.18	
					say	7504.20	
14.1	B Case I	RCC Grade M25 Using Concrete Mixer					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	tonne	5.99	7989.00	47854.11	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.86	250.00	215.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		74158.00			
		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				74158.00	
		d) Formwork and staging 20 per cent of (a+b+c)				14831.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				17797.92	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				10678.75	
		Cost for 15 cum = a+b+c+d+e+f				117466.27	
		Rate per cum = (a+b+c+d+e+f)/15				7831.08	
					say	7813.10	
14.1B Case I (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				74158.00	
		d) Formwork and staging 25 per cent of (a+b+c)				18539.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				18539.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11123.70	
		Cost for 15 cum = a+b+c+d+e+f				122360.70	
		Rate per cum = (a+b+c+d+e+f)/15				8157.38	
					say	8157.40	
14.1B Case I (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				74158.00	
		d) Formwork and staging 30 per cent of (a+b+c)				22247.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				19281.08	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11568.65	
		Cost for 15 cum = a+b+c+d+e+f				127255.13	
		Rate per cum = (a+b+c+d+e+f)/15				8483.68	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
					<i>say</i>	<u>8483.70</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				74158.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				18539.50	
	e)	Overhead charges @ 20 % on (a+b+c+d)				18539.50	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				11123.70	
		Cost for 15 cum = a+b+c+d+e+f				122360.70	
		Rate per cum = (a+b+c+d+e+f)/15				8157.38	
					<i>say</i>	<u>8157.40</u>	
14.1B Case I (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				74158.00	
	d)	Formwork and staging 30 per cent of (a+b+c)				22247.40	
	e)	Overhead charges @ 20 % on (a+b+c+d)				19281.08	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				11568.65	
		Cost for 15 cum = a+b+c+d+e+f				127255.13	
		Rate per cum = (a+b+c+d+e+f)/15				8483.68	
					<i>say</i>	<u>8483.70</u>	
14.1B Case I (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				74158.00	
	d)	Formwork and staging 35 per cent of (a+b+c)				25955.30	
	e)	Overhead charges @ 20 % on (a+b+c+d)				20022.66	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				12013.60	
		Cost for 15 cum = a+b+c+d+e+f				132149.56	
		Rate per cum = (a+b+c+d+e+f)/15				8809.97	
					<i>say</i>	<u>8809.95</u>	
14.1B	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	tonne	47.95	7989.00	383072.55	M-081
		Coarse sand	cum	54.20	490.00	26558.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		b) Labour					
		Mate	day	0.84	250.00	210.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	18.00	200.00	3600.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>		561593.00			
		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				561593.00	
	d)	Formwork and staging 20 per cent of (a+b+c)				112318.60	
	e)	Overhead charges @ 20 % on (a+b+c+d)				134782.32	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				80869.39	
		Cost for 120 cum = a+b+c+d+e+f				889563.31	
		Rate per cum = (a+b+c+d+e+f)/120				7413.03	
					<i>say</i>	<u>7413.05</u>	
14.1B Case II (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				561593.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				140398.25	
	e)	Overhead charges @ 20 % on (a+b+c+d)				140398.25	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				84238.95	
		Cost for 120 cum = a+b+c+d+e+f				926628.45	
		Rate per cum = (a+b+c+d+e+f)/120				7721.90	
					say	<u>7721.90</u>	
14.1B Case II (f)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				561593.00	
		d) Formwork and staging 30 per cent of (a+b+c)				168477.90	
		e) Overhead charges @ 20 % on (a+b+c+d)				146014.18	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				87608.51	
		Cost for 120 cum = a+b+c+d+e+f				963693.59	
		Rate per cum = (a+b+c+d+e+f)/120				8030.78	
					say	<u>8030.80</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				561593.00	
		d) Formwork and staging 25 per cent of (a+b+c)				140398.25	
		e) Overhead charges @ 20 % on (a+b+c+d)				140398.25	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				84238.95	
		Cost for 120 cum = a+b+c+d+e+f				926628.45	
		Rate per cum = (a+b+c+d+e+f)/120				7721.90	
					say	<u>7721.90</u>	
14.1B Case II (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				561593.00	
		d) Formwork and staging 30 per cent of (a+b+c)				168477.90	
		e) Overhead charges @ 20 % on (a+b+c+d)				146014.18	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				87608.51	
		Cost for 120 cum = a+b+c+d+e+f				963693.59	
		Rate per cum = (a+b+c+d+e+f)/120				8030.78	
					say	<u>8030.80</u>	
14.1B Case II (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				561593.00	
		d) Formwork and staging 35 per cent of (a+b+c)				196557.55	
		e) Overhead charges @ 20 % on (a+b+c+d)				151630.11	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				90978.07	
		Cost for 120 cum = a+b+c+d+e+f				1000758.73	
		Rate per cum = (a+b+c+d+e+f)/120				8339.66	
					say	<u>8339.65</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	7989.00	48732.90	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	21.00	200.00	4200.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		75246.00			
		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				75246.00	
		d) Formwork and staging 20 per cent of (a+b+c)				15049.20	
		e) Overhead charges @ 20 % on (a+b+c+d)				18059.04	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				10835.42	
		Cost for 15 cum = a+b+c+d+e+f				119189.66	
		Rate per cum = (a+b+c+d+e+f)/15				7945.98	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1C Case I (f)	(q)	Height 5m to 10m			say	<u>7946.00</u>	
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				75246.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				18811.50	
	e)	Overhead charges @ 20 % on (a+b+c+d)				18811.50	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				11286.90	
		Cost for 15 cum = a+b+c+d+e+f				124155.90	
		Rate per cum = (a+b+c+d+e+f)/15				8277.06	
					say	<u>8277.05</u>	
14.1C Case I (f)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				75246.00	
	d)	Formwork and staging 30 per cent of (a+b+c)				22573.80	
	e)	Overhead charges @ 20 % on (a+b+c+d)				19563.96	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				11738.38	
		Cost for 15 cum = a+b+c+d+e+f				129122.14	
		Rate per cum = (a+b+c+d+e+f)/15				8608.14	
					say	<u>8608.15</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				75246.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				18811.50	
	e)	Overhead charges @ 20 % on (a+b+c+d)				18811.50	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				11286.90	
		Cost for 15 cum = a+b+c+d+e+f				124155.90	
		Rate per cum = (a+b+c+d+e+f)/15				8277.06	
					say	<u>8277.05</u>	
14.1C Case I (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				75246.00	
	d)	Formwork and staging 30 per cent of (a+b+c)				22573.80	
	e)	Overhead charges @ 20 % on (a+b+c+d)				19563.96	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				11738.38	
		Cost for 15 cum = a+b+c+d+e+f				129122.14	
		Rate per cum = (a+b+c+d+e+f)/15				8608.14	
					say	<u>8608.15</u>	
14.1C Case I (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				75246.00	
	d)	Formwork and staging 35 per cent of (a+b+c)				26336.10	
	e)	Overhead charges @ 20 % on (a+b+c+d)				20316.42	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				12189.85	
		Cost for 15 cum = a+b+c+d+e+f				134088.37	
		Rate per cum = (a+b+c+d+e+f)/15				8939.22	
					say	<u>8939.20</u>	
14.1C	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	7989.00	389783.31	M-081
		Coarse sand	cum	54.60	490.00	26754.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
	b)	Labour					
		Mate	day	0.88	250.00	220.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	19.00	200.00	3800.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	Lead =0 km & P&M-050

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>		568710.00			
		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				568710.00	
		d) Formwork and staging 20 per cent of (a+b+c)				113742.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				136490.40	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				81894.24	
		Cost for 120 cum = a+b+c+d+e+f				900836.64	
		Rate per cum = (a+b+c+d+e+f)/120				7506.97	
					<i>say</i>	<u>7506.95</u>	
14.1C Case II (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				568710.00	
		d) Formwork and staging 25 per cent of (a+b+c)				142177.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				142177.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				85306.50	
		Cost for 120 cum = a+b+c+d+e+f				938371.50	
		Rate per cum = (a+b+c+d+e+f)/120				7819.76	
					<i>say</i>	<u>7819.75</u>	
14.1C Case II (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				568710.00	
		d) Formwork and staging 30 per cent of (a+b+c)				170613.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				147864.60	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				88718.76	
		Cost for 120 cum = a+b+c+d+e+f				975906.36	
		Rate per cum = (a+b+c+d+e+f)/120				8132.55	
					<i>say</i>	<u>8132.55</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				568710.00	
		d) Formwork and staging 25 per cent of (a+b+c)				142177.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				142177.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				85306.50	
		Cost for 120 cum = a+b+c+d+e+f				938371.50	
		Rate per cum = (a+b+c+d+e+f)/120				7819.76	
					<i>say</i>	<u>7819.75</u>	
14.1C Case II (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				568710.00	
		d) Formwork and staging 30 per cent of (a+b+c)				170613.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				147864.60	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				88718.76	
		Cost for 120 cum = a+b+c+d+e+f				975906.36	
		Rate per cum = (a+b+c+d+e+f)/120				8132.55	
					<i>say</i>	<u>8132.55</u>	
14.1C Case II (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				568710.00	
		d) Formwork and staging 35 per cent of (a+b+c)				199048.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				153551.70	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				92131.02	
		Cost for 120 cum = a+b+c+d+e+f				1013441.22	
		Rate per cum = (a+b+c+d+e+f)/120				8445.34	
					<i>say</i>	<u>8445.35</u>	
14.1	D Case I	RCC/PSC Grade M35 Using Concrete Mixer.					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	6.33	7989.00	50570.37	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		b) Labour					
		Mate	day	0.90	250.00	225.00	L-12
		Mason	day	1.50	300.00	450.00	L-11
		Mazdoor	day	21.00	200.00	4200.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		77084.00			
		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				77084.00	
		d) Formwork and staging 18 per cent of (a+b+c)				13875.12	
		e) Overhead charges @ 20 % on (a+b+c+d)				18191.82	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				10915.09	
		Cost for 15 cum = a+b+c+d+e+f				120066.04	
		Rate per cum = (a+b+c+d+e+f)/15				8004.40	
						<i>say</i> <u>8004.40</u>	
14.1D Case I (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				77084.00	
		d) Formwork and staging 23 per cent of (a+b+c)				17729.32	
		e) Overhead charges @ 20 % on (a+b+c+d)				18962.66	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11377.60	
		Cost for 15 cum = a+b+c+d+e+f				125153.58	
		Rate per cum = (a+b+c+d+e+f)/15				8343.57	
						<i>say</i> <u>8343.55</u>	
14.1D Case I (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				77084.00	
		d) Formwork and staging 28 per cent of (a+b+c)				21583.52	
		e) Overhead charges @ 20 % on (a+b+c+d)				19733.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11840.10	
		Cost for 15 cum = a+b+c+d+e+f				130241.13	
		Rate per cum = (a+b+c+d+e+f)/15				8682.74	
						<i>say</i> <u>8682.75</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				77084.00	
		d) Formwork and staging 23 per cent of (a+b+c)				17729.32	
		e) Overhead charges @ 20 % on (a+b+c+d)				18962.66	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11377.60	
		Cost for 15 cum = a+b+c+d+e+f				125153.58	
		Rate per cum = (a+b+c+d+e+f)/15				8343.57	
						<i>say</i> <u>8343.55</u>	
14.1D Case I (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				77084.00	
		d) Formwork and staging 28 per cent of (a+b+c)				21583.52	
		e) Overhead charges @ 20 % on (a+b+c+d)				19733.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11840.10	
		Cost for 15 cum = a+b+c+d+e+f				130241.13	
		Rate per cum = (a+b+c+d+e+f)/15				8682.74	
						<i>say</i> <u>8682.75</u>	
14.1D Case I (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				77084.00	
		d) Formwork and staging 33 per cent of (a+b+c)				25437.72	
		e) Overhead charges @ 20 % on (a+b+c+d)				20504.34	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				12302.61	
		Cost for 15 cum = a+b+c+d+e+f				135328.67	
		Rate per cum = (a+b+c+d+e+f)/15				9021.91	
						<i>say</i> <u>9021.90</u>	
14.1D Case I	(iii)	For box girder and balanced cantilever, 38-58 per cent of cost of concrete.					

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				77084.00	
		d) Formwork and staging 38 per cent of (a+b+c)				29291.92	
		e) Overhead charges @ 20 % on (a+b+c+d)				21275.18	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				12765.11	
		Cost for 15 cum = a+b+c+d+e+f				140416.21	
		Rate per cum = (a+b+c+d+e+f)/15				9361.08	
						<i>say</i> <u>9361.10</u>	
14.1D Case I (iii)		(q) Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				77084.00	
		d) Formwork and staging 48 per cent of (a+b+c)				37000.32	
		e) Overhead charges @ 20 % on (a+b+c+d)				22816.86	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				13690.12	
		Cost for 15 cum = a+b+c+d+e+f				150591.30	
		Rate per cum = (a+b+c+d+e+f)/15				10039.42	
						<i>say</i> <u>10039.45</u>	
14.1D Case I (iii)		(r) Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				77084.00	
		d) Formwork and staging 58 per cent of (a+b+c)				44708.72	
		e) Overhead charges @ 20 % on (a+b+c+d)				24358.54	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				14615.13	
		Cost for 15 cum = a+b+c+d+e+f				160766.39	
		Rate per cum = (a+b+c+d+e+f)/15				10717.76	
						<i>say</i> <u>10717.75</u>	
		Case II Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	tonne	50.64	7989.00	404562.96	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		b) Labour					
		Mate	day	0.88	250.00	220.00	L-12
		Mason	day	3.00	300.00	900.00	L-11
		Mazdoor	day	19.00	200.00	3800.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>		583195.00			
		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				583195.00	
		d) Formwork and staging 18 per cent of (a+b+c)				104975.10	
		e) Overhead charges @ 20 % on (a+b+c+d)				137634.02	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				82580.41	
		Cost for 120 cum = a+b+c+d+e+f				908384.53	
		Rate per cum = (a+b+c+d+e+f)/120				7569.87	
						<i>say</i> <u>7569.85</u>	
14.1D Case II (i)		(q) Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				583195.00	
		d) Formwork and staging 23 per cent of (a+b+c)				134134.85	
		e) Overhead charges @ 20 % on (a+b+c+d)				143465.97	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				86079.58	
		Cost for 120 cum = a+b+c+d+e+f				946875.40	
		Rate per cum = (a+b+c+d+e+f)/120				7890.63	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1D Case II (i)	(r)	Height above 10m			say	<u>7890.65</u>	
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				583195.00	
	d)	Formwork and staging 28 per cent of (a+b+c)				163294.60	
	e)	Overhead charges @ 20 % on (a+b+c+d)				149297.92	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				89578.75	
		Cost for 120 cum = a+b+c+d+e+f				985366.27	
		Rate per cum = (a+b+c+d+e+f)/120				8211.39	
					say	<u>8211.40</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				583195.00	
	d)	Formwork and staging 23 per cent of (a+b+c)				134134.85	
	e)	Overhead charges @ 20 % on (a+b+c+d)				143465.97	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				86079.58	
		Cost for 120 cum = a+b+c+d+e+f				946875.40	
		Rate per cum = (a+b+c+d+e+f)/120				7890.63	
					say	<u>7890.65</u>	
14.1D Case II (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				583195.00	
	d)	Formwork and staging 28 per cent of (a+b+c)				163294.60	
	e)	Overhead charges @ 20 % on (a+b+c+d)				149297.92	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				89578.75	
		Cost for 120 cum = a+b+c+d+e+f				985366.27	
		Rate per cum = (a+b+c+d+e+f)/120				8211.39	
					say	<u>8211.40</u>	
14.1D Case II (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				583195.00	
	d)	Formwork and staging 33 per cent of (a+b+c)				192454.35	
	e)	Overhead charges @ 20 % on (a+b+c+d)				155129.87	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				93077.92	
		Cost for 120 cum = a+b+c+d+e+f				1023857.14	
		Rate per cum = (a+b+c+d+e+f)/120				8532.14	
					say	<u>8532.15</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				583195.00	
	d)	Formwork and staging 38 per cent of (a+b+c)				221614.10	
	e)	Overhead charges @ 20 % on (a+b+c+d)				160961.82	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				96577.09	
		Cost for 120 cum = a+b+c+d+e+f				1062348.01	
		Rate per cum = (a+b+c+d+e+f)/120				8852.90	
					say	<u>8852.90</u>	
14.1D Case II (iii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				583195.00	
	d)	Formwork and staging 48 per cent of (a+b+c)				279933.60	
	e)	Overhead charges @ 20 % on (a+b+c+d)				172625.72	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				103575.43	
		Cost for 120 cum = a+b+c+d+e+f				1139329.75	
		Rate per cum = (a+b+c+d+e+f)/120				9494.41	
					say	<u>9494.40</u>	
14.1D Case II (iii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				583195.00	
	d)	Formwork and staging 58 per cent of (a+b+c)				338253.10	
	e)	Overhead charges @ 20 % on (a+b+c+d)				184289.62	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				110573.77	
		Cost for 120 cum = a+b+c+d+e+f				1216311.49	
		Rate per cum = (a+b+c+d+e+f)/120				10135.93	
					say	<u>10135.95</u>	
14.1	E	PSC Grade M-40					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Case 1					
		Using concrete mixer.					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Material					
		Cement	tonne	6.45	7989.00	51529.05	M-081
		Coarse sand	cum	6.75	490.00	3307.50	M-005
		20 mm Aggregate	cum	8.10	726.00	5880.60	M-053
		10 mm Aggregate	cum	5.40	1650.00	8910.00	M-051
		Admixture @ 0.4 per cent of cement	kg	25.80	50.00	1290.00	M-180
		b) Labour					
		Mate	day	0.96	250.00	240.00	L-12
		Mason	day	2.00	300.00	600.00	L-11
		Mazdoor	day	22.00	200.00	4400.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	220.00	1320.00	P&M-009
		Generator 33 KVA	hour	6.00	370.00	2220.00	P&M-079
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum</i>		79698.00			
		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				79698.00	
		d) Formwork and staging 20 per cent of (a+b+c)				15939.60	
		e) Overhead charges @ 20 % on (a+b+c+d)				19127.52	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11476.51	
		Cost for 15 cum = a+b+c+d+e+f				126241.63	
		Rate per cum = (a+b+c+d+e+f)/15				8416.11	
					<i>say</i>	8416.10	
14.1E Case I (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				79698.00	
		d) Formwork and staging 25 per cent of (a+b+c)				19924.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				19924.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11954.70	
		Cost for 15 cum = a+b+c+d+e+f				131501.70	
		Rate per cum = (a+b+c+d+e+f)/15				8766.78	
					<i>say</i>	8766.80	
14.1E Case I (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				79698.00	
		d) Formwork and staging 30 per cent of (a+b+c)				23909.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				20721.48	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				12432.89	
		Cost for 15 cum = a+b+c+d+e+f				136761.77	
		Rate per cum = (a+b+c+d+e+f)/15				9117.45	
					<i>say</i>	9117.45	
14.1E 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				79698.00	
		d) Formwork and staging 25 per cent of (a+b+c)				19924.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				19924.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11954.70	
		Cost for 15 cum = a+b+c+d+e+f				131501.70	
		Rate per cum = (a+b+c+d+e+f)/15				8766.78	
					<i>say</i>	8766.80	
14.1E Case I (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				79698.00	
		d) Formwork and staging 30 per cent of (a+b+c)				23909.40	
		e) Overhead charges @ 20 % on (a+b+c+d)				20721.48	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				12432.89	
		Cost for 15 cum = a+b+c+d+e+f				136761.77	
		Rate per cum = (a+b+c+d+e+f)/15				9117.45	
					<i>say</i>	9117.45	
14.1E Case I (ii)	(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 15 cum				79698.00	
		d) Formwork and staging 35 per cent of (a+b+c)				27894.30	
		e) Overhead charges @ 20 % on (a+b+c+d)				21518.46	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				12911.08	
		Cost for 15 cum = a+b+c+d+e+f				142021.84	
		Rate per cum = (a+b+c+d+e+f)/15				9468.12	
						<i>say</i> 9468.10	
14.1E	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		<i>Unit = cum</i>					
		<i>Taking output = 120 cum</i>					
		a) Material					
		Cement	tonne	51.60	7989.00	412232.40	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture @ 0.4 per cent of cement	kg	206.40	50.00	10320.00	M-180
		b) Labour					
		Mate	day	0.94	250.00	235.00	L-12
		Mason	day	3.50	300.00	1050.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>		601550.00			
		For formwork and staging add the following:					
14.1E	(i)	For solid/voided slab super-structure, 18-28 per cent of (a+b+c)					
Case II	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
		d) Formwork and staging 18 per cent of (a+b+c)				108279.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				141965.80	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				85179.48	
		Cost for 15 cum = a+b+c+d+e+f				936974.28	
		Rate per cum = (a+b+c+d+e+f)/120				7808.12	
						<i>say</i> 7808.10	
14.1E	(q)	Height 5m to 10m					
Case II (i)							
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
		d) Formwork and staging 23 per cent of (a+b+c)				138356.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				147981.30	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				88788.78	
		Cost for 120 cum = a+b+c+d+e+f				976676.58	
		Rate per cum = (a+b+c+d+e+f)/120				8138.97	
						<i>say</i> 8138.95	
14.1E	(r)	Height above 10m					
Case II (i)							
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
		d) Formwork and staging 28 per cent of (a+b+c)				168434.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				153996.80	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				92398.08	
		Cost for 120 cum = a+b+c+d+e+f				1016378.88	
		Rate per cum = (a+b+c+d+e+f)/120				8469.82	
						<i>say</i> 8469.80	
14.1E	(ii)	For T-beam & slab, 23-33 per cent of (a+b+c)					
Case II	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
		d) Formwork and staging 23 per cent of (a+b+c)				138356.50	
		e) Overhead charges @ 20 % on (a+b+c+d)				147981.30	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				88788.78	
		Cost for 120 cum = a+b+c+d+e+f				976676.58	
		Rate per cum = (a+b+c+d+e+f)/120				8138.97	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1E Case II (ii)	(q)	Height 5m to 10m			say	<u>8138.95</u>	
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
	d)	Formwork and staging 28 per cent of (a+b+c)				168434.00	
	e)	Overhead charges @ 20 % on (a+b+c+d)				153996.80	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				92398.08	
		Cost for 120 cum = a+b+c+d+e+f				1016378.88	
		Rate per cum = (a+b+c+d+e+f)/120				8469.82	
					say	<u>8469.80</u>	
14.1E Case II (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
	d)	Formwork and staging 33 per cent of (a+b+c)				198511.50	
	e)	Overhead charges @ 20 % on (a+b+c+d)				160012.30	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				96007.38	
		Cost for 120 cum = a+b+c+d+e+f				1056081.18	
		Rate per cum = (a+b+c+d+e+f)/120				8800.68	
					say	<u>8800.70</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				601550.00	
	d)	Formwork and staging 38 per cent of (a+b+c)				228589.00	
	e)	Overhead charges @ 20 % on (a+b+c+d)				166027.80	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				99616.68	
		Cost for 120 cum = a+b+c+d+e+f				1095783.48	
		Rate per cum = (a+b+c+d+e+f)/120				9131.53	
					say	<u>9131.55</u>	
14.1E Case II (iii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
	d)	Formwork and staging 48 per cent of (a+b+c)				288744.00	
	e)	Overhead charges @ 20 % on (a+b+c+d)				178058.80	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				106835.28	
		Cost for 120 cum = a+b+c+d+e+f				1175188.08	
		Rate per cum = (a+b+c+d+e+f)/120				9793.23	
					say	<u>9793.25</u>	
14.1E Case II (iii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				601550.00	
	d)	Formwork and staging 58 per cent of (a+b+c)				348899.00	
	e)	Overhead charges @ 20 % on (a+b+c+d)				190089.80	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				114053.88	
		Cost for 120 cum = a+b+c+d+e+f				1254592.68	
		Rate per cum = (a+b+c+d+e+f)/120				10454.94	
					say	<u>10454.95</u>	
14.1F	F	PSC Grade M-45					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 120 cum</i>					
	a)	Material					
		Cement	tonne	55.80	7989.00	445786.20	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture @ 0.4 per cent of cement	kg	223.20	50.00	11160.00	M-180
	b)	Labour					
		Mate	day	0.94	250.00	235.00	L-12
		Mason	day	3.50	300.00	1050.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00	13860.00	P&M-049

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>		635944.00			
		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				635944.00	
	d)	Formwork and staging 16 per cent of (a+b+c)				101751.04	
	e)	Overhead charges @ 20 % on (a+b+c+d)				147539.01	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				88523.40	
		Cost for 120 cum = a+b+c+d+e+f				973757.45	
		Rate per cum = (a+b+c+d+e+f)/120				8114.65	
					say	<u>8114.65</u>	
14.1F (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				635944.00	
	d)	Formwork and staging 21 per cent of (a+b+c)				133548.24	
	e)	Overhead charges @ 20 % on (a+b+c+d)				153898.45	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				92339.07	
		Cost for 120 cum = a+b+c+d+e+f				1015729.76	
		Rate per cum = (a+b+c+d+e+f)/120				8464.41	
					say	<u>8464.40</u>	
14.1F (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				635944.00	
	d)	Formwork and staging 26 per cent of (a+b+c)				165345.44	
	e)	Overhead charges @ 20 % on (a+b+c+d)				160257.89	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				96154.73	
		Cost for 120 cum = a+b+c+d+e+f				1057702.06	
		Rate per cum = (a+b+c+d+e+f)/120				8814.18	
					say	<u>8814.20</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				635944.00	
	d)	Formwork and staging 21 per cent of (a+b+c)				133548.24	
	e)	Overhead charges @ 20 % on (a+b+c+d)				153898.45	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				92339.07	
		Cost for 120 cum = a+b+c+d+e+f				1015729.76	
		Rate per cum = (a+b+c+d+e+f)/120				8464.41	
					say	<u>8464.40</u>	
14.1F (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				635944.00	
	d)	Formwork and staging 26 per cent of (a+b+c)				165345.44	
	e)	Overhead charges @ 20 % on (a+b+c+d)				160257.89	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				96154.73	
		Cost for 120 cum = a+b+c+d+e+f				1057702.06	
		Rate per cum = (a+b+c+d+e+f)/120				8814.18	
					say	<u>8814.20</u>	
14.1F (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				635944.00	
	d)	Formwork and staging 31 per cent of (a+b+c)				197142.64	
	e)	Overhead charges @ 20 % on (a+b+c+d)				166617.33	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				99970.40	
		Cost for 120 cum = a+b+c+d+e+f				1099674.36	
		Rate per cum = (a+b+c+d+e+f)/120				9163.95	
					say	<u>9163.95</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				635944.00	
	d)	Formwork and staging 36 per cent of (a+b+c)				228939.84	
	e)	Overhead charges @ 20 % on (a+b+c+d)				172976.77	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				103786.06	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Cost for 120 cum = a+b+c+d+e+f				1141646.67	
		Rate per cum = (a+b+c+d+e+f)/120				9513.72	
					say	<u>9513.70</u>	
14.1F (iii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				635944.00	
		d) Formwork and staging 46 per cent of (a+b+c)				292534.24	
		e) Overhead charges @ 20 % on (a+b+c+d)				185695.65	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				111417.39	
		Cost for 120 cum = a+b+c+d+e+f				1225591.28	
		Rate per cum = (a+b+c+d+e+f)/120				10213.26	
					say	<u>10213.25</u>	
14.1F (iii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				635944.00	
		d) Formwork and staging 56 per cent of (a+b+c)				356128.64	
		e) Overhead charges @ 20 % on (a+b+c+d)				198414.53	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				119048.72	
		Cost for 120 cum = a+b+c+d+e+f				1309535.88	
		Rate per cum = (a+b+c+d+e+f)/120				10912.80	
					say	<u>10912.80</u>	
14.1	G	PSC Grade M-50					
		Unit = 1 cum					
		Taking output = 120 cum					
		a) Material					
		Cement	tonne	58.80	7989.00	469753.20	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture @ 0.4 per cent of cement	kg	235.20	50.00	11760.00	M-180
		b) Labour					
		Mate	day	0.94	250.00	235.00	L-12
		Mason	day	3.50	300.00	1050.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		660511.00			
		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				660511.00	
		d) Formwork and staging 35 per cent of (a+b+c)				231178.85	
		e) Overhead charges @ 20 % on (a+b+c+d)				178337.97	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				107002.78	
		Cost for 120 cum = a+b+c+d+e+f				1177030.60	
		Rate per cum = (a+b+c+d+e+f)/120				9808.59	
					say	<u>9808.60</u>	
14.1G (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				660511.00	
		d) Formwork and staging 45 per cent of (a+b+c)				297229.95	
		e) Overhead charges @ 20 % on (a+b+c+d)				191548.19	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				114928.91	
		Cost for 120 cum = a+b+c+d+e+f				1264218.05	
		Rate per cum = (a+b+c+d+e+f)/120				10535.15	
					say	<u>10535.15</u>	
14.1G (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				660511.00	
		d) Formwork and staging 55 per cent of (a+b+c)				363281.05	
		e) Overhead charges @ 20 % on (a+b+c+d)				204758.41	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				122855.05	
		Cost for 120 cum = a+b+c+d+e+f				1351405.51	
		Rate per cum = (a+b+c+d+e+f)/120				11261.71	
					say	11261.70	
14.1	H	PSC Grade M- 55					
		Unit = 1 cum					
		Taking output = 120 cum					
		a) Material					
		Cement	tonne	63.50	7989.00	507301.50	M-081
		Coarse sand	cum	54.00	490.00	26460.00	M-004
		20 mm Aggregate	cum	64.80	660.00	42768.00	M-053
		10 mm Aggregate	cum	43.20	1500.00	64800.00	M-051
		Admixture @ 0.4 per cent of cement	kg	254.00	50.00	12700.00	M-180
		b) Labour					
		Mate	day	0.94	250.00	235.00	L-12
		Mason	day	3.50	300.00	1050.00	L-11
		Mazdoor	day	20.00	200.00	4000.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2218.00	13308.00	P&M-002
		Generator 100 KVA	hour	6.00	693.00	4158.00	P&M-080
		Loader	hour	6.00	1139.00	6834.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	924.00	13860.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	0.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	254.00	1524.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		698999.00			
		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				698999.00	
		d) Formwork and staging 35 per cent of (a+b+c)				244649.65	
		e) Overhead charges @ 20 % on (a+b+c+d)				188729.73	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				113237.84	
		Cost for 120 cum = a+b+c+d+e+f				1245616.22	
		Rate per cum = (a+b+c+d+e+f)/120				10380.14	
					say	10380.15	
14.1H (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				698999.00	
		d) Formwork and staging 45 per cent of (a+b+c)				314549.55	
		e) Overhead charges @ 20 % on (a+b+c+d)				202709.71	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				121625.83	
		Cost for 120 cum = a+b+c+d+e+f				1337884.09	
		Rate per cum = (a+b+c+d+e+f)/120				11149.03	
					say	11149.05	
14.1H (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				698999.00	
		d) Formwork and staging 55 per cent of (a+b+c)				384449.45	
		e) Overhead charges @ 20 % on (a+b+c+d)				216689.69	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				130013.81	
		Cost for 120 cum = a+b+c+d+e+f				1430151.95	
		Rate per cum = (a+b+c+d+e+f)/120				11917.93	
					say	11917.95	
		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					
		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					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Taking output = 1 MT</i>					
		a) Material					
		HYSB bars including 5 per cent. for laps and wastage	tonne	1.05	38219.00	40129.95	M-082
		Binding wire	Kg	8.00	70.00	560.00	M-072
		b) Labour for cutting, bending, tying and placing in position					
		Mate	day	0.44	250.00	110.00	L-12
		Blacksmith	day	3.00	300.00	900.00	L-02
		Mazdoor	day	8.00	200.00	1600.00	L-13
		<i>Basic Cost of Labour & Material (a+b)</i>		43300.00			
		c) Overhead charges @ 20 % on (a+b)				8659.99	
		d) Contractor's profit @ 10 % on (a+b+c)				5195.99	
		Rate per MT = a+b+c+d				57155.93	
					<i>say</i>	57155.95	
14.3	1800	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications					
		<i>Unit = 1 MT</i>					
		<i>Taking output = 0.377 MT</i>					
		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	0.39	58000.00	22330.00	M-119
		Sheathing duct ID 66 mm along with 5 per cent. extra length 40 x 1.05 = 42 m.	metre	42.00	90.00	3780.00	M-165
		Tube anchorage set complete with bearing plate, permanent wedges etc.	each	2.00	3800.00	7600.00	M-187
		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	7989.00	998.63	M-081
		Add 0.50 per cent. cost of material for Spacers, Insulation tape and miscellaneous items				1735.43	
		b) Labour					
		i) For making and fixing cables, anchorages					
		Mate	day	0.16	250.00	40.00	L-12
		Blacksmith	day	1.00	300.00	300.00	L-02
		Mazdoor	day	3.00	200.00	600.00	L-13
		ii) For prestressing					
		Mate/Supervisor	day	0.05	250.00	12.50	L-12
		Prestressing operator / Fitter	day	0.25	300.00	75.00	L-08
		Mazdoor	day	1.00	200.00	200.00	L-13
		iii) For grouting					
		Mate/Supervisor	day	0.05	250.00	12.50	L-12
		Mason	day	0.25	300.00	75.00	L-11
		Mazdoor	day	1.00	200.00	200.00	L-13
		c) Machinery					
		Stressing jack with pump	hour	2.50	128.00	320.00	P&M-040
		Grouting pump with agitator	hour	1.00	150.00	150.00	M-111
		Generator 33 KVA.	hour	3.50	370.00	1295.00	P&M-079
		d) Overhead charges @ 20 % on (a+b+c)				656.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				393.60	
		Cost for 0.377 MT (a+b+c+d+e)				40773.66	
		Rate per MT = (a+b+c+d+e)/0.377				108152.93	
					<i>say</i>	108152.95	
		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					
		<i>Unit = 1 cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Cement concrete M30 Grade Refer relevant item of concrete in Item 14.1 excluding formwork	cum	1.00	4739.00	4739.00	Item 14.1(C)
		HYSB bar reinforcement Rate as per Item No 14.2(Excluding OH & CP)	tonne	0.075	43300.00	3247.50	Item 14.2 A
		b) Labour					
		Mazdoor for cleaning deck slab concrete surface.	day	0.15	200.00	30.00	L-13
		c) Overhead charges @ 20 % on (a+b)				1603.30	
		d) Contractor's profit @ 10 % on (a+b+c)				961.98	
		Rate per cum (a+b+c+d)				10581.78	
					<i>say</i>	10581.80	
14.5	515 & 2702	Mastic Asphalt					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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 cl					
		<i>Unit = sqm</i>					
		<i>Taking output = 72.46 sqm (2 tonnes)(0.869 cum) assuming a density of 2.3 tonnes/cum.</i>					
		a) Labour					
		Mate	day	0.49	250.00	122.50	L-12
		Mazdoor	day	11.00	200.00	2200.00	L-13
		Mazdoor (Skilled)	day	1.25	300.00	375.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	0.06	354.00	21.24	P&M-031
		Air compressor 250 cfm	hour	0.06	469.00	28.14	P&M-001
		Mastic cooker 1 tonne capacity	hour	6.00	62.00	372.00	P&M-030
		Bitumen boiler 1500 litres capacity	hour	6.00	197.00	1182.00	P&M-005
		Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.00	388.00	388.00	P&M-053
		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 CRRI for a specific case)					
		i) Bitumen 80/100 or 60/70 or 30/40 @ 10.2 per cent by weight of mix. $2 \times 10.2/100 = 0.204$	tonne	0.204	36878.00	7523.11	M-074
		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	460.00	179.40	M-021
		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	10500.00	3780.00	M-188
		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	1650.00	907.50	M-051
		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	950.00	34.20	M-142
		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	36.88	38.72	M-074/1000
		d) Overhead charges @ 20 % on (a+b+c)				3430.36	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2058.22	
		Cost for 72.46 sqm = a+b+c+d+e				22640.39	
		Rate per sqm = (a+b+c+d+e)/72.46				312.45	
					<i>say</i>	<i>312.45</i>	
		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 CRRI 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 spa					
		<i>Unit = 1 RM</i>					
		<i>Taking output = 2 x 24 m span = 48 m</i>					
		a) Material					
		Cement concrete M30 Grade Refer relevant item of concrete in Item 14.1(C) by using batching plant, excluding formwork i.e. per cum basic cost (a+b+c)	cum	4.09	4739.00	19391.99	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					
		Add 5 per cent of above cost for form work for casting in casting yard.				969.60	
		HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.87	43300.00	37454.50	Item 14.2 A
		Refer MoRTH SD / 202.					
		Add 5 per cent of (a) for handling and fixing of precast panels in position				2890.80	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Overhead charges @ 20 % on (a)				12141.38	
		c) Contractor's profit @ 10 % on (a+b)				7284.83	
		Rate for 48 m (a+b+c)				80133.10	
		Rate per metre (a+b+c)/48				1669.44	
					say	<u>1669.45</u>	
		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					
		<i>Unit = 1 RM</i>					
		<i>Taking output = 2 x 24 m span = 48 m.</i>					
		a) Material					
		Cement concrete M30 Grade Refer relevant item of concrete in Item 14.1(C) by using batching plant, excluding formwork i.e. per cum basic cost (a+b+c)	cum	4.092	4739.00	19391.99	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 vehicle 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 =				2327.04	
		Add 12 per cent of above cost for form work.					
		HYSD bar reinforcement Rate as per Item No 14.2(Excluding OH & CP)	tonne	0.87	43300.00	37454.50	Item 14.2 A
		refer MoRTH SD / 202.					
		b) Overhead charges @ 20 % on (a)				11834.71	
		c) Contractor's profit @ 10 % on (a+b)				7100.82	
		Rate for 48 m (a+b+c)				78109.06	
		Rate per metre (a+b+c)/48				1627.27	
					say	<u>1627.25</u>	
		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					
		<i>Unit = 1 RM</i>					
		<i>Taking output = 2 x 50 m span = 100 m</i>					
		a) Material:					
		1) ISMC 100 = $2.806 \times 1.05 = 2.946$ MT	tonne	2.95	45219.00	133215.17	M-179
		2) MS Flat = $0.964 \times 1.05 = 1.012$ MT	tonne	1.01	45219.00	45761.63	M-179
		3) MS bars = $0.17 \times 1.05 = 0.180$ MT	tonne	0.18	45219.00	8139.42	M-179
		4) MS bolts, nuts and washers	tonne	0.15	50000.00	7500.00	M-130*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.				9730.81	
		Add for cost of concrete for fixing vertical posts in the performed recess @ 1 per cent of cost of material.				1946.16	
		Add for electricity charges, welding and drilling equipment, electrodes and other consumables @ 1 per cent of cost of material.				1946.16	
		b) Labour					
		Mate	day	2.80	250.00	700.00	L-12
		Mazdoor (Skilled)	day	30.00	300.00	9000.00	L-15
		Mazdoor	day	40.00	200.00	8000.00	L-13
		c) Overhead charges @ 20 % on (a+b)				45187.87	
		d) Contractor's profit @ 10 % on (a+b+c)				27112.72	
		Cost for 100 m steel railing = a+b+c+d				298239.95	
		Rate per metre (a+b+c+d)/100				2982.40	
					say	<u>2982.40</u>	
14.9	2705	Drainage Spouts complete as per drawing and Technical specification					
		<i>Unit = 1 No.</i>					
		<i>Taking output = 1 No.</i>					
		a) Material					
		Corrosion resistant Structural steel including 5 per cent wastage	Kg	4.00	0.05	0.18	M-087/1000
		GI pipe 100mm dia	metre	6.00	28.00	168.00	M-056
		GI bolt 10 mm Dia	each	6.00	35.00	210.00	M-110
		Galvanised MS flat clamp	each	2.00	30.00	60.00	M-101
		b) Labour					
		For fabrication					
		Mate	day	0.02	250.00	5.00	L-12

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Skilled (Blacksmith, welder etc.)	day	0.02	300.00	6.00	L-02
		Mazdoor	day	0.02	200.00	4.00	L-13
		For fixing in position					
		Mate	day	0.01	250.00	2.50	L-12
		Mason	day	0.01	300.00	3.00	L-11
		Mazdoor	day	0.20	200.00	40.00	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.				24.93	
		c) Overhead charges @ 20 % on (a+b)				104.72	
		d) Contractor's profit @ 10 % on (a+b+c)				62.83	
		Rate per metre (a+b+c+d)				691.17	
					say	<u>691.15</u>	
		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	4862.00	4862.00	Item 12.8 (A)
		Rate per cum			say	<u>4862.00</u>	
14.11	1500,160,1700 & 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					
		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	4736.00	4736.00	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.				94.72	
		HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.05	43300.00	2165.00	Item 14.2 A
		b) Overhead charges @ 20 % on (a)				1399.14	
		c) Contractor's profit @ 10 % on(a+b)				839.49	
		Rate per cum (a+b+c)				9234.35	
					say	<u>9234.35</u>	
		Note					
		The grade of reinforced cement concrete may be adopted as M30 for severe conditions and M25 for moderate conditions.					
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.					
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	250.00	2.50	L-12
		Painter	day	0.25	300.00	75.00	L-18
		Mazdoor (Skilled)	day	0.25	300.00	75.00	L-15
		b) Material					
		Water based paint of approved quality for cement concrete surface	Litres	5.00	70.00	350.00	M-190
		c) Overhead charges @ 20 % on (a+b)				100.50	
		d) Contractor's profit @ 10 % on (a+b+c)				60.30	
		Cost for 10 sqm (a+b+c+d)				663.30	
		Rate per sqm (a+b+c+d)/10				66.33	
					say	<u>66.35</u>	
14.17	2604	Burried Joint					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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 surfac					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.02	250.00	5.00	L-12
		Mazdoor	day	0.40	200.00	80.00	L-13
		Mazdoor (Skilled)	day	0.20	300.00	60.00	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	38.50	9143.75	M-060/1000
		Add 1 per cent of cost of steel plate cutting, welding consumables and galvanised nails.				91.44	
		c) Overhead charges @ 20 % on (a+b)				1876.04	
		d) Contractor's profit @ 10 % on (a+b+c)				1125.62	
		Cost for 12 m = (a+b+c+d)				12381.85	
		Rate per m = (a+b+c+d)/12				1031.82	
					say	<u>1031.80</u>	
		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.					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		a) Labour					
		Cutting, bending, carrying & fixing etc.					
		Mate	day	0.04	250.00	10.00	L-12
		Mazdoor	day	0.50	200.00	100.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	L-15
		b) Material					
		Copper plate - 12m long x 250 mm wide	kg	55.00	600.00	33000.00	M-086
		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 @ 20 % on (a+b)				6652.00	
		d) Contractor's profit @ 10 % on (a+b+c)				3991.20	
		Cost for 12 m = (a+b+c+d)				43903.20	
		Rate per m = (a+b+c+d)/12				3658.60	
					say	<u>3658.60</u>	
14.18		(ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		a) Labour					
		For carrying, placing & fixing.					
		Mate	day	0.008	250.00	2.00	L-12
		Mazdoor	day	0.10	200.00	20.00	L-13
		Mazdoor (Skilled)	day	0.10	300.00	30.00	L-15
		b) Material					
		20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	3.00	620.00	1860.00	M-084
		Area = 12 x 0.25 = 3 sqm					
		c) Overhead charges @ 20 % on (a+b)				382.40	
		d) Contractor's profit @ 10 % on (a+b+c)				229.44	
		Cost for 12 m = (a+b+c+d)				2523.84	
		Rate per m = (a+b+c+d)/12				210.32	
					say	<u>210.35</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 s					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.01	250.00	2.50	L-12
		Mazdoor	day	0.20	200.00	40.00	L-13
		Mazdoor (Skilled)	day	0.10	300.00	30.00	L-15

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Material					
		Premoulded joint filler 12 m long, 20 mm thick and 300 mm deep.	sqm	3.60	500.00	1800.00	M-141
		c) Overhead charges @ 20 % on (a+b)				374.50	
		d) Contractor's profit @ 10 % on (a+b+c)				224.70	
		Cost for 12 m = (a+b+c+d)				2471.70	
		Rate per m = (a+b+c+d)/12				205.98	
					<i>say</i>	<u>206.00</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 <i>Unit = Running meter</i> <i>Taking output = 12 m</i>					
		12m long x 100 mm wide x 10mm deep recess					
		a) Labour					
		Mate	day	0.02	250.00	5.00	L-12
		Mazdoor	day	0.50	200.00	100.00	L-13
		Mazdoor (Skilled)	day	0.10	300.00	30.00	L-15
		b) Material					
		Sand	cum	0.012	490.00	5.88	M-005
		Volume 12 x 0.1 x 0.01 = 0.012 cum					
		Weight 0.012 x 1400 = 16.8kg					
		Bitumen	cum	0.001	36878.00	36.88	M-074
		16.8 x 0.06 = 1 kg					
		c) Overhead charges @ 20 % on (a+b)				35.55	
		d) Contractor's profit @ 10 % on (a+b+c)				21.33	
		Cost for 12 m = (a+b+c+d)				234.64	
		Rate per m = (a+b+c+d)/12				19.55	
					<i>say</i>	<u>19.55</u>	
		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 o <i>Unit = Running meter</i> <i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.052	250.00	13.00	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		Mazdoor (Skilled)	day	0.30	300.00	90.00	L-15
		b) Material					
		Crushed stone aggregate 12.5 mm nominal size	cum	0.75	1067.00	800.25	M-052
		Polymer modified bitumen	kg	77.50	40.21	3116.28	M-078/1000
	2.4	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 Add 1 per cent for welding and foam caulking/backer rod and other incidentals.	kg	113.00	180.00	20340.00	M-103
		c) Machinery				245.60	
		Mastic cooker 1 tonne capacity	hour	1.00	62.00	62.00	P&M-030
		Smooth 3-wheeled steel roller 8-10 capacity	hour	0.50	458.00	229.00	P&M-044
		d) Overhead charges @ 20 % on (a+b+c)				5019.22	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3011.53	
		Cost for 12 m asphalt plug joint = (a+b+c+d+e)				33126.88	
		Rate per m = (a+b+c+d+e)/12				2760.57	
					<i>say</i>	<u>2760.55</u>	
		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					
		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 b <i>Unit = Running meter</i> <i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.06	250.00	15.00	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	L-15

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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 cla	metre	12.00	9000.00	108000.00	M-093
		Add 5 per cent. of cost of material for anchorage reinforcement, welding and other incidentals.				5400.00	
		c) Overhead charges @ 20 % on (a+b)				22753.00	
		d) Contractor's profit @ 10 % on (a+b+c)				13651.80	
		Cost for 12 m = (a+b+c+d)				150169.80	
		Rate per m = (a+b+c+d)/12				12514.15	
					say	<u>12514.15</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 jo					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.036	250.00	9.00	L-12
		Mazdoor	day	0.60	200.00	120.00	L-13
		Mazdoor (Skilled)	day	0.30	300.00	90.00	L-15
		b) Material					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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	180.00	80280.00	M-103
		Add 5 per cent of cost of above for structural steel for anchorage, welding and other incidentals.				4024.95	
		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	4000.00	48000.00	M-143
		Add 1 per cent of cost of sealing element for lubricant-cum-adhesive and other consumables.				480.00	
		c) Overhead charges @ 20 % on (a+b)				26600.79	
		d) Contractor's profit @ 10 % on (a+b+c)				15960.47	
		Cost for 12 m = (a+b+c+d)				175565.21	
		Rate per m = (a+b+c+d)/12				14630.43	
						<i>say</i> 14630.45	
		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					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.05	250.00	12.50	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		Mazdoor (Skilled)	day	0.25	300.00	75.00	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	11000.00	132000.00	M-178
		Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				6614.38	
		c) Overhead charges @ 20 % on (a+b)				27780.38	
		d) Contractor's profit @ 10 % on (a+b+c)				16668.23	
		Cost for 12 m = (a+b+c+d)				183350.48	
		Rate per m = (a+b+c+d)/12				15279.21	
						<i>say</i> 15279.20	
		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.					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.056	250.00	14.00	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		Mazdoor (Skilled)	day	0.40	300.00	120.00	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 au	metre	12.00	190000.00	2280000.00	M-127
		c) Overhead charges @ 20 % on (a+b)				456066.80	
		d) Contractor's profit @ 10 % on (a+b+c)				273640.08	
		Cost for 12 m Modular strip/box seal joint = (a+b+c+d)				3010040.88	
		Rate per m = (a+b+c+d)/12				250836.74	
					<i>say</i>	<u>250836.75</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					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.07	250.00	17.50	L-12
		Mazdoor	day	1.25	200.00	250.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	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 t	metre	12.00	210000.00	2520000.00	M-128
		c) Overhead charges @ 20 % on (a+b)				504083.50	
		d) Contractor's profit @ 10 % on (a+b+c)				302450.10	
		Cost for 12 m Modular strip/box seal joint = (a+b+c+d)				3326951.10	
		Rate per m = (a+b+c+d)/12				277245.93	
					<i>say</i>	<u>277245.95</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	385.00	385.00	M-003
		Stone Spalls	cum	0.20	400.00	80.00	M-008
		b) Labour					
		Mate	day	0.04	250.00	10.00	L-12
		Mason	day	0.35	300.00	105.00	L-11
		Mazdoor *	day	0.75	200.00	150.00	L-13
		c) Overhead charges @ 20 % on (a+b)				146.00	
		d) Contractor's profit @ 10 % on (a+b+c)				87.60	
		Rate per cum = (a+b+c+d)				963.60	
						<i>say</i> 963.60	
		* 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					
		<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	155.00	3410.00	M-102
		Stone	cum	5.63	385.00	2167.55	M-003
		Stone Spalls	cum	1.13	400.00	452.00	M-008
		b) Labour					
		Mate	day	0.18	250.00	45.00	L-12
		Mazdoor (Skilled)	day	1.50	300.00	450.00	L-15
		Mazdoor	day	3.00	200.00	600.00	L-13
		c) Overhead charges @ 20 % on (a+b)				1424.9	
		d) Contractor's profit @ 10 % on (a+b+c)				854.95	
		Cost for 5.63 cum = a+b+c+d				9404.41	
		Rate per cum = (a+b+c+d)/5.63				1670.41	
						<i>say</i> 1670.40	
		* 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 c					
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	5055.20	5055.20	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.				101.10	
		Rate per cum				5156.30	
						<i>say</i> 5156.10	
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					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Stone weighing not less than 40kg	cum	1.00	385.00	385.00	M-003
		Stone spalls of minimum 25 mm size	cum	0.20	400.00	80.00	M-008
		b) Labour					
		Mate	day	0.04	250.00	10.00	L-12
		Mason	day	0.35	300.00	105.00	L-11
		Mazdoor	day	0.75	200.00	150.00	L-13
		c) Overhead charges @ 20 % on (a+b)				146.00	
		d) Contractor's profit @ 10 % on (a+b+c)				87.60	
		Rate per cum = (a+b+c+d)				963.60	
						<i>say</i> 963.60	
15.4		B Cement Concrete Blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Concrete Grade M15 Rate as per Item No. 12.8 (A)	cum	1.00	5055.20	5055.20	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.				101.10	
		Rate per cum				5156.30	
						<i>say</i> 5156.10	
15.5	2504	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Graded stone aggregate of required size	cum	1.20	957.00	1148.40	M-012
		b) Labour					
		Mate	day	0.05	250.00	12.50	L-12
		Mazdoor (Skilled)	day	0.25	300.00	75.00	L-15
		Mazdoor *	day	1.00	200.00	200.00	L-13
		c) Overhead charges @ 20 % on (a+b)				287.18	
		d) Contractor's profit @ 10 % on (a+b+c)				172.31	
		Rate per cum = (a+b+c+d)				1895.39	
						<i>say</i> 1895.40	
		Includes Mazdoor required for trimming of slope to proper profile and preparation of bed.					
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 ado					
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					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Cement mortar 1:3 (Rate as in Item 12.6 sub-analysis) excluding OH & CP	cum	0.33	4779.00	1577.07	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	3683.00	1215.39	Item 12.8 (A)
		Add 1 per cent of cost to account for excavation for preparation of bed.				27.92	
		c) Material					
		Stone	cum	1.00	385.00	385.00	M-003
		Stone Spalls	cum	0.20	400.00	80.00	M-008
		d) Labour					
		Mate	day	0.08	250.00	20.00	L-12
		Mason	day	0.50	300.00	150.00	L-11
		Mazdoor (for laying stones, filling of quarry spalls)	day	1.50	200.00	300.00	L-13
		e) Overhead charges @ 20 % on (a+c+d)				502.41	
		f) Contractor's profit @ 10 % on (a+c+d+e)				301.45	
		Rate per cum = (a+b+c+d+e+f)				4559.25	
						<i>say</i> 4559.25	
		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	5055.20	5055.20	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	5055.20	1668.22	Item 12.8 (A)
		Add 1 per cent of cost to account for excavation for preparation of bed.				67.23	
		Rate per cum				6790.65	
						<i>say</i> 6790.40	
15.9	2506	Dry Rubble Flooring					
		Construction of dry rubble flooring at cross drainage works for relatively less important works.					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Stone	cum	1.00	385.00	385.00	M-003
		Stone Spalls	cum	0.20	400.00	80.00	M-008
		b) Labour					
		Mate	day	0.10	250.00	25.00	L-12
		Mason	day	0.50	300.00	150.00	L-11

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		mazdoor	day	1.50	200.00	300.00	L-13
		Add 1 per cent of (b) for trimming and preparation of base.				4.75	
		c) Overhead charges @ 20 % on (a+b)				188.95	
		d) Contractor's profit @ 10 % on (a+b+c)				113.37	
		Rate per cum = (a+b+c+d)				1247.07	
					say	<u>1247.05</u>	
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	3798.55	3798.55	Item 12.7 (A)
		Rate same as per item No. 12.7 (A) including OH & CP					
		Rate per cum			say	<u>3799.00</u>	
		or					
15.10		B Cement concrete Grade M15					
		Concrete Grade M15 Rate as per item No. 12.8 (A) including OH & CP	cum	1.00	5055.20	5055.20	Item 12.8 (A)
		Rate per cum			say	<u>5055.00</u>	
	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	385.00	385.00	M-003
		Stone Spalls	cum	0.20	400.00	80.00	M-008
	b)	Labour					
		Mate	day	0.05	250.00	12.50	L-12

Sr No	Ref. to MORTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mason	day	0.25	300.00	75.00	L-11
		Mazdoor	day	1.00	200.00	200.00	L-13
		Add 1 per cent of cost of (a+b) for trimming and preparation of bed.				7.53	
		c) Overhead charges @ 20 % on (a+b)				152.01	
		d) Contractor's profit @ 10 % on (a+b+c)				91.20	
		Rate per cum = (a+b+c+d)				1003.23	
						<i>say</i> <u>1003.25</u>	
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 tensi					
		<i>Unit = cum</i>					
		<i>Taking output = 7 x 3 x 0.6 = 12.60 cum</i>					
		a) Labour					
		Mate	day	0.28	250.00	70.00	L-12
		Mazdoor	day	5.00	200.00	1000.00	L-13
		Mazdoor (Skilled)	day	2.00	300.00	600.00	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.	sqm	61.00	155.00	9455.00	M-102
		Stone boulders with least dimension of 200 mm	cum	12.60	385.00	4851.00	M-003
		Stone spalls of minimum size 25 mm	cum	2.52	400.00	1008.00	M-008
		c) Overhead charges @ 20 % on (a+b)				3396.80	
		d) Contractor's profit @ 10 % on (a+b+c)				2038.08	
		Cost for 12.60 cum (a+b+c+d)				22418.88	
		Rate per cum (a+b+c+d)/12.60				1779.28	
						<i>say</i> <u>1779.30</u>	
		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 c					
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					
		<i>Unit = cum</i>					
		<i>Taking output = 2 x 1 x 0.3 x 10 Nos. = 6.00 cum</i>					
		a) Labour					
		Mate	day	0.14	250.00	35.00	L-12
		Mazdoor	day	2.50	200.00	500.00	L-13
		Mazdoor (Skilled)	day	1.00	300.00	300.00	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	155.00	10075.00	M-102
		Stone boulders with least dimension of 200 mm	cum	6.00	385.00	2310.00	M-003
		Stone spalls of minimum size 25 mm	cum	1.20	400.00	480.00	M-008
		c) Overhead charges @ 20 % on (a+b)				2740.00	
		d) Contractor's profit @ 10 % on (a+b+c)				1644.00	
		Cost for 6.00 cum (a+b+c+d)				18084.00	
		Rate per cum (a+b+c+d)/6.00				3014.00	
						<i>say</i> <u>3014.00</u>	
		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 c					

CHAPTER-16							
REPAIR AND REHABILITATION							
Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
16.1	2809	Removal of existing cement concrete wearing coat including its disposal complete as per Technical Specification without causing any detrimental effect to any part of the bridge structure and removal of dismantled material with all lifts and lead upto 1000					
		<i>Unit = Sq m (Thickness 75 mm)</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Male	day	0.06	250.00	15.00	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with pneumatic breaker/jack hammer along with accessories.	hour	1.00	469.00	469.00	P&M-001
		Tractor-trolley.	hour	0.50	388.00	194.00	P&M-053
		c) Overhead charges @ 10 % on (a+b)				87.80	
		d) Contractor's profit @ 10 % on (a+b+c)				96.58	
		Cost for 10 sqm = (a+d+c+d)				1062.38	
		Rate per sqm = (a+b+c+d)/10				106.24	
						<i>say 106.25</i>	
16.2	2809	Removal of existing asphaltic wearing coat comprising of 50 mm thick asphaltic concert laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000 m.					
		<i>Unit = Sq m</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Male	day	0.03	250.00	7.50	L-12
		Mazdoor	day	0.75	200.00	150.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with pneumatic breaker.	hour	0.75	469.00	351.75	P&M-001
		Tractor-trolley.	hour	0.40	388.00	155.20	P&M-053
		c) Overhead charges @ 10 % on (a+b)				66.45	
		d) Contractor's profit @ 10 % on (a+b+c)				73.09	
		Cost for 10 sqm = (a+d+c+d)				803.98	
		Rate per sqm = (a+b+c+d)/10				80.40	
						<i>say 80.40</i>	
16.3	2807	Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical Specification					
		<i>Unit = Sq m</i>					
		<i>Taking output = 1 sqm</i>					
		Assuming thickness 25 mm					
		a) Material					
		Cement	kg	16.00	7.99	127.82	M-081/1000
		Graded sand	cum	0.04	490.00	19.60	M-005
		Wire mesh 50mm x 50mm size of 3mm wire	kg	2.00	132.00	264.00	M-192
		Epoxy	kg	0.67	200.00	134.00	M-095
		Accelerator compound for guniting @ 4 per cent of weight of cement	kg	0.64	50.00	32.00	M-180
		Add 2 per cent of cost of material for miscellaneous consumables like nozzles, wire brush, cotton waste etc.				11.55	
		b) Labour					
		Male	day	0.01	250.00	2.50	L-12
		Mason	day	0.04	300.00	12.00	L-11
		Mazdoor	day	0.14	200.00	28.00	L-13
		c) Machinery					
		Compressor with guniting equipment along with accessories	hour	0.10	660.00	66.00	P&M-076
		d) Overhead charges @ 10 % on (a+b+c)				69.75	
		e) Contractor's profit @ 10 % on (a+b+c+d)				76.72	
		Rate per sqm = (a+b+c+d+e)				843.94	
						<i>say 843.95</i>	
16.4	2800	Providing and inserting nipples with approved fixing compound after drilling holes for grouting as per Technical Specifications including subsequent cutting/removal and sealing of the hole as necessary of nipples after completion of grouting with Cement/E					
		<i>Unit = Number</i>					
		<i>Taking output = 1 No.</i>					
		a) Material					
		Nipples	each	1.00	25.00	25.00	M-129
		Cement, fixing compound and consumables @ 15 per cent of cost of nipple				3.75	
		b) Labour					
		Male	day	0.01	250.00	2.50	L-12
		Mazdoor (Skilled) labour for drilling	day	0.08	300.00	24.00	L-15
		Mazdoor (Skilled) labour for fixing nipple and sealing inlets	day	0.08	300.00	24.00	L-15
		Mazdoor for cutting and removing of nipples	day	0.04	200.00	8.00	L-13
		Add 10 per cent of labour cost for drilling holes etc				5.85	
		c) Overhead charges @ 10 % on (a+b)				9.31	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) Contractor's profit @ 10 % on (a+b+c)				10.24	
		Rate per No. = (a+b+c+d)				112.65	
					say	112.65	
16.5	2806	Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical Specification.					
		A Cement Grout					
		Unit = kg					
		Taking output = 1 kg					
		a) Material					
		Cement including 10 per cent wastage	kg	1.10	7.99	8.79	M-081/1000
		Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				1.76	
		b) Labour					
		Male	day	0.08	250.00	20.00	L-12
		Mazdoor (Skilled)	day	0.10	300.00	30.00	L-15
		Mazdoor	day	0.10	200.00	20.00	L-13
		c) Machinery					
		Grout pump with agitator and accessories	hour	0.10	150.00	15.00	M-111
		d) Overhead charges @ 10 % on (a+b+c)				9.55	
		e) Contractor's profit @ 10 % on (a+b+c+d)				10.51	
		Rate per kg = (a+b+c+d+e)				35.06	
					say	35.05	
		B Cement Mortar (1:1) Grouting					
		Unit = kg					
		Taking output = 1 kg					
		a) Material					
		Cement including 10 per cent wastage	kg	0.55	7.99	4.39	M-081/1000
		Sand including 10 per cent wastage	kg	0.55	0.33	0.18	M-005/1500
		Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				0.88	
		b) Labour					
		Male	day	0.08	250.00	20.00	L-12
		Mazdoor (Skilled)	day	0.10	300.00	30.00	L-15
		Mazdoor	day	0.10	200.00	20.00	L-13
		c) Machinery					
		Grout pump with agitator and accessories	hour	0.10	150.00	15.00	M-111
		d) Overhead charges @ 10 % on (a+b+c)				9.05	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9.95	
		Rate per kg = (a+b+c+d+e)				109.45	
					say	109.45	
16.6	2800	Patching of damaged concrete surface with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer and as approved by the Engineer.					
		Unit = sqm					
		Taking output = 10 sqm for an average thickness of 25mm.					
		a) Labour					
		Male	day	0.06	250.00	15.00	L-12
		Mazdoor (Skilled)	day	0.75	300.00	225.00	L-15
		Mazdoor	day	0.75	200.00	150.00	L-13
		b) Material					
		Pre-packed polymer concrete based on epoxy system complete with curing compound, initiator and promoter including 5 per cent wastage.	kg	315.00	30.00	9450.00	M-145
		c) Machinery					
		Grout pump with agitator and accessories	hour	2.00	150.00	300.00	M-111
		d) Overhead charges @ 10 % on (a+b+c)				1014.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1115.40	
		Cost for 10 sqm = a+b+c+d+e				12269.40	
		Rate per sqm = (a+b+c+d+e)/10				1226.94	
					say	1226.95	
		Note This item is a proprietary item available in market as pre-packed polymer concrete and is required to be applied as per instructions of the manufacturer.					
16.7	2803	Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.					
		Unit = kg					
		Taking output = 1 kg					
		a) Material					
		Epoxy including 10 per cent wastage	kg	1.10	200.00	220.00	M-095
		b) Labour					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Male	day	0.08	250.00	20.00	L-12
		Mazdoor (Skilled)	day	0.10	300.00	30.00	L-15
		Mazdoor	day	0.10	200.00	20.00	L-13
		c) Machinery					
		Epoxy Injection gun	hour	0.10	2750.00	275.00	P&M-078
		d) Overhead charges @ 10 % on (a+b+c)				56.50	
		e) Contractor's profit @ 10 % on (a+b+c+d)				62.15	
		Rate per kg = (a+b+c+d+e)				683.65	
					<i>say</i>	<u>683.65</u>	
16.9	2807	Removal of defective concrete, cleaning the surface thoroughly, applying the shotcrete mixture mechanically with compressed air under pressure, comprising of cement, sand, coarse aggregates, water and quick setting compound in the proportion as per clause					
		<i>unit: sqm</i>					
		<i>Taking output = 10 sqm, 40 mm average thickness.</i>					
		a) Labour					
		Male	day	0.04	250.00	10.00	L-12
		Mazdoor	day	0.50	200.00	100.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	L-15
		b) Machinery					
		Air compressor 250 cfm	hour	1.00	469.00	469.00	P&M-001
		Shotcreteing equipment	hour	1.00	660.00	660.00	P&M-076
		water tanker 6 KL capacity	hour	0.02	444.00	8.88	P&M-060
		c) Material					
		Cement	kg	120.00	7.99	958.68	M-081/1000
		Sand	cum	0.15	490.00	73.50	M-005
		Coarse aggregate of size 4.75mm	cum	0.15	500.00	75.00	M-024
		Quick setting compound	kg	2.50	46.00	115.00	M-147
		Water	KL	0.10	55.00	5.50	M-189
		d) Overhead charges @ 10 % on (a+b+c)				262.56	
		e) Contractor's profit @ 10 % on (a+b+c+d)				288.81	
		Cost for 10 sqm = a+b+c+d+e				3176.93	
		Rate per sqm = (a+b+c+d+e)/10				317.69	
					<i>say</i>	<u>317.70</u>	
16.10	2800	Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		Assumed thickness - 10 mm					
		a) Material					
		Acrylic polymer bonding coat	Litre	1.40	110.00	154.00	M-057
		pre-packed cement based polymer mortar of strength 45 Mpa at 28 days	kg	12.00	30.00	360.00	M-145
		Add 3 per cent of (a) above for wastage.				15.42	
		b) Labour					
		Male	day	0.04	250.00	10.00	L-12
		Mazdoor (Skilled)	day	0.50	300.00	150.00	L-15
		Mazdoor	day	0.50	200.00	100.00	L-13
		c) Overhead charges @ 10 % on (a+b)				78.94	
		d) Contractor's profit @ 10 % on (a+b+c)				86.84	
		Cost for 10 sqm = a+b+c+d				955.20	
		Rate per sqm = (a+b+c+d)/10				95.52	
					<i>say</i>	<u>95.50</u>	
16.11	2805	Epoxy bonding of new concrete to old concrete					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Material					
		Epoxy resin with pot life not less than 60-90 minutes and satisfying testing as per clause 2803.9	kg	8.00	90.00	720.00	M-098
		Add 3 per cent of (a) above for wastage.				21.60	
		b) Labour					
		Male	day	0.04	250.00	10.00	L-12
		Mazdoor (Skilled)	day	0.50	300.00	150.00	L-15
		Mazdoor	day	0.50	200.00	100.00	L-13
		c) Overhead charges @ 10 % on (a+b)				100.16	
		d) Contractor's profit @ 10 % on (a+b+c)				110.18	
		Cost for 10 sqm = a+b+c+d				1211.94	
		Rate per sqm = (a+b+c+d)/10				121.19	
					<i>say</i>	<u>121.20</u>	
16.17		Replacement of Expansion Joints complete as per drawings					
		<i>Unit - 1 RM</i>					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Taking output = 12 RM</i>					
		a) Material					
		Epoxy for bonding new concrete to old concrete @ 0.8 kg/sqm	kg	9.60	200.00	1920.00	M-095
		M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i))	cum	3.60	5687.00	20473.20	Item 14.1(C)
		b) Labour					
		Removal of old expansion joint including breaking of concrete, cutting of lugs and shifting of broken material etc.					
		Male	day	0.26	250.00	65.00	L-12
		Mazdoor	day	6.00	200.00	1200.00	L-13
		Mazdoor (Skilled)	day	0.50	300.00	150.00	L-15
		c) Overhead charges @ 10 % on (a+b)				2380.82	
		d) Contractor's profit @ 10 % on (a+b+c)				2618.90	
		Cost for replacement of 12 RM = a+b+c+d				28807.92	
		Rate per RM = (a+b+c+d)/12				2400.66	
						<i>say</i> <u>2400.65</u>	
		Note					The rate for the installation of new expansion joints may be taken from the chapter on superstructure. Broken concrete will have to be replaced which has been included in this analysis.
16.18		Replacement of Damaged Concrete Railing.					
		<i>Unit = RM</i>					
		<i>Taking output = 10 RM</i>					
		a) Labour					
		Labour for dismantling old railing and disposal of dismantled material.					
		Male	day	0.20	250.00	50.00	L-12
		Mazdoor	day	5.00	200.00	1000.00	L-13
		b) Machinery					
		Tractor-trolley for disposal of dismantled material	hour	1.00	388.00	388.00	P&M-053
		c) Overhead charges @ 10 % on (a+b)				143.80	
		d) Contractor's profit @ 10 % on (a+b+c)				158.18	
		Cost for 10 m = a+b+c+d				1739.98	
		Rate per metre = (a+b+c+d)/10				174.00	
						<i>say</i> <u>174.00</u>	
		Note					The rate for the provision of new railing may be adopted from the chapter on superstructure.
16.19		Replacement of Crash Barrier.					
		<i>Unit = RM</i>					
		<i>Taking output = 10 M</i>					
		a) Labour					
		Labour for dismantling old railing and disposal of dismantled material.					
		Male	day	0.40	250.00	100.00	L-12
		Mazdoor	day	10.00	200.00	2000.00	L-13
		b) Machinery					
		Tractor-trolley for disposal of dismantled material	hour	1.00	388.00	388.00	P&M-053
		c) Overhead charges @ 10 % on (a+b)				248.80	
		d) Contractor's profit @ 10 % on (a+b+c)				273.68	
		Cost for 10 m = a+b+c+d				3010.48	
		Rate per metre = (a+b+c+d)/10				301.05	
						<i>say</i> <u>301.05</u>	
		Note					The rate for the construction of new crash barrier may be adopted from chapter 8 on Traffic and Transportation.
16.20		Replacement of Damaged Mild Steel Railing					
		<i>Unit = RM</i>					
		<i>Taking output = 10 M</i>					
		a) Labour					
		Labour for dismantling old railing and disposal of dismantled material.					
		Male	day	0.16	250.00	40.00	L-12
		Mazdoor	day	4.00	200.00	800.00	L-13
		b) Machinery					
		Tractor-trolley for disposal of dismantled material	hour	1.00	388.00	388.00	P&M-053
		c) Overhead charges @ 10 % on (a+b)				122.80	
		d) Contractor's profit @ 10 % on (a+b+c)				135.08	
		Cost for 10 m = a+b+c+d				1485.88	
		Rate per metre = (a+b+c+d)/10				148.59	
						<i>say</i> <u>148.60</u>	
16.21		Repair of Crash Barrier					
		Repair of concrete crash barrier with cement concert of M-30 grade by cutting and trimming the damaged portion to a regular shape, cleaning the area to be repaired thoroughly, applying cement concert after erection of proper form work.					
		<i>Unit = Running meter.</i>					

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<i>Taking output = 10 M.</i>					
		It is assumed that damage is to the extent of 10 per cent of the volume of concrete .This will require 0.30 cum of concrete.					
		a) Manpower*					
		Male	day	0.04	250.00	10.00	L-12
		Mazdoor	day	1.00	200.00	200.00	L-13
		* For dismantling and trimming the surface to a regular shape and removal of damaged material.					
		b) Material					
		M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i))	cum	0.30	5687.00	1706.10	Item 14.1(C)
		This may be priced based on the rate given the chapter of superstructure.					
		c) Overhead charges @ 10 % on (a)				21.00	
		d) Contractor's profit @ 10 % on (a+c)				23.10	
		Cost for 10 m = a+b+c+d				1960.20	
		Rate per m = (a+b+c+d)/10				196.02	
					say	196.00	
16.22		Repair of RCC Railing					
		Carrying out repair of RCC M30 railing to bring it to the original shape.					
		<i>Unit = Running meter.</i>					
		<i>Taking output = 10 M.</i>					
		It is assumed that damage is to the extent of 10 per cent .					
		a) Material					
		M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i))	cum	0.10	5687.00	568.70	Item 14.1(C)
		HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.01	43300.00	562.90	Item 14.2 A
		b) Labour*					
		Male	day	0.016	250.00	4.00	L-12
		mazdoor	day	0.20	200.00	40.00	L-13
		* For dismantling and trimming the surface to a regular shape and removal of damaged material.					
		c) Overhead charges @ 10 % on (b)				4.40	
		d) Contractor's profit @ 10 % on (b+c)				4.84	
		Cost for 10 m = a+b+c+d				1184.84	
		Rate per m = (a+b+c+d)/10				118.48	
					say	118.50	
16.23		Repair of Steel Railing					
		Repair of steel railing to bring it to the original shape					
		It is assumed that the damage to the steel railing is to the extent of 10 per cent .					
		<i>Unit = Running meter.</i>					
		<i>Taking output = 10 M.</i>					
		a) Material					
		Mild steel ISMC series	kg	29.00	45.22	1311.35	M-179/1000
		Flat iron	kg	10.00	45.22	452.19	M-179/1000
		MS Bolt and nuts	kg	1.00	50.00	50.00	M-130
		Add 5 per cent of cost of material for painting.				90.68	
		b) Labour					
		Male	day	0.016	250.00	4.00	L-12
		Mazdoor (Skilled)	day	0.20	300.00	60.00	L-15
		Mazdoor	day	0.20	200.00	40.00	L-13
		c) Overhead charges @ 10 % on (a+b)				200.82	
		d) Contractor's profit @ 10 % on (a+b+c)				220.90	
		Cost of repair for 10m = a+b+c+d				2429.94	
		Cost of meter = (a+b+c+d)/10				242.99	
					say	243.00	