



**GOVERNMENT OF HIMACHAL PRADESH
PUBLIC WORKS DEPARTMENT**



**SCHEDULE OF RATES
2016
PMGSY
BRIDGE WORKS**

CO N T E N T S

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ANNEXURE-A

USAGE RATES OF PLANT & MACHINERY

Sr.No.	Description of machinery		Output of Machine		Unit	Av. Rate 2016
	Machine	Activity	Unit	Output		
1	Air Compressor 210 cfm	Supplying compressed air	cfm	210	per hour	465
2	Batch mix HMP 40-60 TPH	BM, DBM, SDBC, PM	t/h	50	per hour	16896
3	Batch type HMP 30/40 TPH	BM, DBM, SDBC, PM	t/h	35	per hour	13798
4	Bitumen boiler oil fired	Heating of bitumen				
	200 litre		litre / h	400	per hour	445
	1000 litre		litre / h	2000	per hour	1408
5	Bitumen emulsion pressure	Applying bitumen tack coat	sqm/h	1750	per hour	1569
6	Concrete mixer 0.28/0.4 cum	Mixing of ingredients	cum/h	2.50	per hour	350
7	Crane upto 8T	Lifting of materials			per hour	916
8	Dozer D 50	Dozing cutting	cum/h	200.00	per hour	6285
			cum/h	100.00		3160
9	Electric generator set, 125 KVA	Electricity generation	KVA	100.00	per hour	1125
10	Emulsion Sprayer with Tractor	Spraying of Emulsion			per hour	1258
11	Front end-loader 1 cum bucket capacity @ 45 cum/hour	Loading Aggregates	cum/h	45.00	per hour	1281
		Loading Soil	cum/h	100.00		1321
12	Hydraulic broom with tractor	Surface cleaning	sqm/h	1250	per hour	528
13	Hydraulic Excavator 0.9 cum	Excavation	cum/h	100.00	per hour	1843
14	Hydraulic self propelled chip	Surface Dressing	sqm/h	1500	per hour	4130
15	Jack Hammer with tractor	Pavement breaking & rock drilling	cum/h	05. to 1	per hour	2316
16	Joint Cutting Machine with 2-3	Cutting of Joints	h		per hour	1191
17	Mixall 6-10 t capacity	Mixing of bituminous materials	t/h	8.00	per hour	2519
18	Motor Grader	Scarifier & levelling	cum/h	200.00	per hour	3513
				50.00		2318
19	Needle vibrator	Vibrating cement concrete mix	cum/h	3.50	per hour	113
20	Paver finisher	Laying/spreading	t/h	75.00	per hour	4300
21	Plate compactor	Compaction	cum/h		per hour	105
22	Plate vibrator	Compaction	cum/h		per hour	98
23	Screed vibrator	Compaction	cum/h		per hour	98
24	Smooth wheeled 80-100 kN tandem	Compaction of Sub-base/ Asphalt	cum/h	30.00	per hour	1319
25	Stone crusher (Integrated) of 200	Crushing of Spalls	t/h	200.00	per hour	3983
26	Three wheel 80-100 kN Static Roller	Compaction/ Rolling			per hour	
		Earth:- Embankment or sub-grade	cum/h	80/70		791
		Sub-base G-I	cum/h	10.00		745
		Sub-base G-II/G-III	cum/h	8.00		741
		WMM	cum/h	16.00		741
		BUSG	cum/h	10.00		741
		BM 50/75 mm	cum/h	12.00		741
		Premix 20 mm	sqm/h	250.00		741
		Seal Coat	sqm/h	500.00		741
		Surface Dressing 1st Coat	sqm/h	400.00		741

Sr.No.	Description of machinery		Output of Machine		Unit	Av. Rate 2016
	Machine	Activity	Unit	Output		
		Surface Dressing 2ndCoat	sqm/h	500.00		741
27	Tipper 5.5 cum/10 t	Carriage	cum/trip	5.50	per hour	513
28	Tractor with Disc Harrows	Pulverisation of soil	cum/h	80.00	per hour	801
29	Tractor with ripper @ 60 cum per	Ripping Pavements, uprooting	cum/h	60.00	per hour	687
30	Tractor with trolley	Transportation of materials	t/trip	3 to 5	per hour	581
31	Tractor with Rotavator	Scarifier	cum/h	25.00	per hour	688
32	Tractor Mount Grader	Spreading	cum/h	26.00	per hour	1192
33	Truck 10 t capacity	Carriage	cum/trip	5.50	per hour	589
34	Vibratory roller 80-100 kN	Compaction of soil WMM	cum/h	100.00	per hour	2417
		Compaction of BM	cum/h	60.00		2417
35	Water tanker 6 kl capacity (Truck	Carriage of water	litre / h	12000	per hour	500
36	Wet mix plant (Pug Mill)	Wet Mix	cum/h	25	per hour	1840
37	Grout pump with agitator and accessories		hour	0	0	682
38	Concrete Pump		hour	0	0	1565
39	Epoxy Injection gun		hour	0	0	809
40	Stressing jack with pump		hour	0	0	328
41	Grouting pump with agitator		hour	0	0	680
42	i) Hire charges for jack of 40 tonne lifting capacity.		Day	0	0	546
43	Mastic cooker 1 tonne capacity		hour	0	0	109
44	Trailer 35 tonne capacity for transporting to site.		tonne.km	0	0	2202
45	Trailor 30 tonne capacity during placement.		hour	0	0	2224
46	Transit Mixer 4.0/4.5 cum		hour	0	0	1601
47	Transit Mixer 30 cum		hour	0	0	1464
48	Integrated Stone Crusher 100THP	100 TPH	hour	0	0	15044
49	Integrated Stone Crusher 200 HP	200 TPH	hour	0	0	20872
50	Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.		hour	0	0	8327

ANNEXURE-B

BASIC RATES OF LABOUR

Sr. No.	Description of Labour	Unit	Rate including 1/6th Paid Holiday (Rs.)
1	Bhisti	day	210.00
2	Bitumen Sprayer	day	210.00
3	Blacksmith	day	315.00
4	Blaster	day	259.00
5	Carpenter 1st Class	day	351.17
6	Chips spreader	day	210.00
7	Chiseller	day	210.00
8	Dresser (Skilled)	day	210.00
9	Driller	day	210.00
10	Electrician	day	315.00
11	Fitter	day	259.00
12	Mason (1st class)	day	315.00
13	Mason (2nd Class)	day	259.00
14	Mate	day	210.00
15	Mazdoor (Unskilled)	day	210.00
16	Mazdoor (Semi skilled)	day	210.00
17	Mazdoor (Skilled)	day	210.00
18	Painter (Ist class)	day	259.00
19	Plumber	day	259.00
20	Surveyor	day	315.00
21	White Washer	day	210.00
22	Driver	day	274.17

Rates approved by the Govt. of HP vide notification No. Fin-(PR)B(7)-33/2010 dated 17-04-2015.

ANNEXURE-C
BASIC RATES OF MATERIAL

Sr. No.	Description	Unit	Av. Rate
1	Aggregate - Grading I (40 mm nominal Size) 37.25 mm - 25 mm	cum	1093.00
2	Aggregate - Grading I (40 mm nominal Size) 5 mm and below	cum	1227.00
3	Aggregate - Grading II (19 mm nominal Size) 10 mm - 5 mm	cum	5573.00
4	Aggregate - Grading II (19 mm nominal Size) 25 mm – 10 mm	cum	5573.00
5	Aggregate - Grading II (19 mm nominal Size) 5 mm and below	cum	1158.00
6	Aggregate 10 mm	cum	1281.00
7	Aggregate 20 mm	cum	1276.00
8	Aggregate 40 mm	cum	1069.00
9	Aggregate- Crushable type such as moorum or Gravel for Grading I	cum	907.00
10	Aggregate- Crushable type such as moorum or Gravel for Grading II	cum	914.00
11	Aggregate- Crushable type such as moorum or Gravel for Grading III	cum	957.00
12	Aggregate-Grading I 90 mm to 45 mm	cum	952.00
13	Aggregate-Grading II 63 mm to 45 mm	cum	999.00
14	Aggregate-Grading III 53 mm to 22.4 mm	cum	1067.00
15	Aggregates 22.4 mm to 2.36 mm for wet mix macadam	cum	1103.00
16	Aggregates 45 mm to 22.4 mm for wet mix macadam	cum	1073.00
17	Aluminium sheeting (1.5 mm thick)	sqm	406.00
18	Angle Iron 50 mm x 50 mm x 6 mm	Kg	74.00
19	Binding Material for road	cum	663.00
20	Binding wire	kg	83.00
21	Bitumen (Crumb Rubber Modified)	tonne	52350.00
22	Bitumen (S-90)	t	50100.00
23	Bitumen Emulsion (RS-1)	t	50383.00
24	Bitumen Emulsion (SS-1)	t	52574.00
25	Bitumen emulsion (MS)	t	60519.00
26	Bond stone (400 mm x 150 mm x 150 mm)	No.	30.00
27	Brick 1st Class	No.	9.00
28	Cement	t	7688.00

Sr. No.	Description	Unit	Av. Rate
29	Crushed Sand or Grit Passing 2.36 mm and retained on 180 micron	cum	1093.00
30	Crushed Stone Aggregate 26.5 mm to 75 micron	cum	1145.00
31	Crushed Stone chipping 13.2 mm nominal size	cum	1220.00
32	Crushed Stone Chipping 6.7 mm size 100% passing 11.2 mm and retained on 2.36 mm	cum	1231.00
33	Crushed Stone Chipping 6.7 mm size 100% passing 9.5 mm and retained on 2.36 mm	cum	1231.00
34	Crushed Stone chipping 9.5 mm nominal size	cum	1227.00
35	Crushed Stone Coarse Aggregate Passing 53 mm and retained on 2.8 mm	cum	1130.00
36	Electric Detonator	each	16.00
37	Filter media	cum	751.00
38	Fine aggregate/Crushed sand 2.36 mm to 75 micron	cum	1132.00
39	Fuel wood	Qtl	863.00
40	Gelatine 80 per cent	kg	98.00
41	Graded stone aggregate	cum	1029.00
42	Hand Broken Metal 40 mm size	cum	1022.00
43	Key Aggregates passing 22.4 mm and retained on 2.8 mm	cum	1117.00
44	Lime	t	11793.00
45	Loose stone for filling	cum	760.00
46	RCC Pipe NP2 (1200 mm dia) i/c collars	m	3809.00
47	RCC Pipe NP2 (1000 mm dia) i/c collars	m	3583.00
48	RCC Pipe NP2 (900 mm dia) i/c collars	m	3016.00
49	RCC Pipe NP3 (900 mm dia) i/c collars	m	4119.00
50	Road marking paint	litre	422.00
51	Sand (Coarse)	cum	1101.00
52	Sand (Fine)	cum	1111.00
53	Steel Reinforcement (HYSD Bars)	t	56871.00
54	Steel Reinforcement (MS Round Bars)	t	52548.00
55	Steel Reinforcement (TMT Bars)	t	55559.00
56	Stone Boulder of size 150 mm and below (minimum 25 kg net)	cum	766.00
57	Stone Chips 12 mm size	cum	1208.00

Sr. No.	Description	Unit	Av. Rate
58	Stone Chips 13.2 mm to 5.6 mm	cum	1217.00
59	Stone Crushed Aggregate 11.2 mm to 0.09 mm	cum	1218.00
60	Stone for Coarse Rubble Masonry 1st Sort	cum	1368.00
61	Stone for Coarse Rubble Masonry 2nd Sort	cum	1303.00
62	Stone for Random Rubble Masonry	cum	1170.00
63	Stone for Stone Set Pavement (300 mm x 200 mm x 150 mm)	No.	21.00
64	Stone Screening - Type A 13.2 mm for Grading-1	cum	1213.00
65	Stone Screening - Type A 13.2 mm for Grading-2	cum	1213.00
66	Steel (ISMC) 100 mm	t	50100.00
67	Stone Screening - Type B 11.2 mm for Grading-2	cum	1213.00
68	Stone Screening - Type B 11.2 mm for Grading-3	cum	1213.00
69	Water	kl	102.00
70	Well graded Granular Base Material - Grading A 2.36 mm below	cum	956.00
71	Well graded Granular Base Material - Grading A 26.5 mm to 4.75 mm	cum	913.00
72	Well graded Granular Base Material - Grading A 53 mm to 26.5 mm	cum	872.00
73	Well graded Granular Base Material - Grading B 2.36 mm below	cum	888.00
74	Well graded Granular Base Material - Grading B 26.5 mm to 4.75 mm	cum	880.00
75	Well graded Granular Base Material - Grading C 2.36 mm below	cum	863.00
76	Well graded Granular Base Material - Grading C 2.36 mm below	cum	883.00
77	Well Graded Material for Sub-Base - Grading I 2.36 mm below	cum	856.00
78	Well Graded Granular sub-base material of Grading-I as per table 400.1 of Specification.	cum	938.00
79	Well Graded Granular sub-base material of Grading-II as per table 400.1 of Specification.	cum	924.00
80	Well Graded Granular sub-base material of Grading-III as per table 400.1 of Specification.	cum	914.00
81	Well Graded Gravel/Soil aggregate base material of Grading-A as per table 400.2 of Specification.	cum	920.00
82	Well Graded Gravel/Soil aggregate base material of Grading-B as per table 400.2 of Specification.	cum	938.00
83	Well Graded Gravel/Soil aggregate base material of Grading-C as per table 400.2 of Specification.	cum	946.00
84	Well Graded Gravel/Soil aggregate surface course material as per table 400.3 of Specification.	cum	922.00

Sr. No.	Description	Unit	Av. Rate
85	Well Graded Gravel/Soil aggregate base material of nominal maximum size 80 mm as per table 2.3 of IRC SP 77-2008.	cum	929.00
86	Well Graded Gravel/Soil aggregate base material of nominal maximum size 40 mm as per table 2.3 of IRC SP 77-2008.	cum	935.00
87	Well Graded Gravel/Soil aggregate base material of nominal maximum size 20 mm as per table 2.3 of IRC SP 77-2008.	cum	936.00
88	Well Graded Gravel/Soil aggregate base material of nominal maximum size 10 mm as per table 2.3 of IRC SP 77-2008.	cum	910.00
89	Well Graded Gravel/Soil aggregate base material of nominal maximum size 5 mm as per table 2.3 of IRC SP 77-2008.	cum	958.00
90	Apoxy Primer	Ltr.	206.00
91	Apoxy Paint	Ltr.	374.00
92	Steel paint	Ltr.	293.00
93	1.6 mm thick MS Sheet strengthened by 25mmX5mm MS flat iron on logo and middle plate angle iron 25mm X 25 mm X 5 mm on bottom plate painting with stove enameled paint on both sides as per MORD specification.	Per Sqm	1451.00
94	PVC pipe 100 mm dia.	Per rmt.	260.00
95	G.I.Wire		82.00
96	Granular material (Natural occurring, soil gravel mixture / quarry waste, Kankar, laterite, dhandla.		376.00
97	1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	Per Sqm	1554.00
98	Cement Primer as per specifications	Ltr.	149.00
99	Paint conforming to requirement of Clause 1701.3.8	Ltr.	312.00
100	Compensation for earth taken from private land	Cum	63.00
101	Corrosion resistant structural steel grating including 5 per cent wastage	Kg	151.00
102	G I pipe 100 mm dia	Mtr.	837.00
103	MS tubes	Kg	91.00
104	Angle iron	kg	79.00
105	Wire mesh 50mm x 50mm size of 3mm wire	kg	134.00
106	Epoxy	kg	213.00
107	Accelerator compound for guniting @ 4 per cent of weight of cement	kg	156.00
108	Nipples	each	155.00
109	Pre-packed polymer concrete based on epoxy system complete with curing compound, initiator and promoter including 5 per cent wastage.	kg	17.00

Sr. No.	Description	Unit	Av. Rate
110	Epoxy resin-hardener mix for prime coat	kg	1804.00
111	Epoxy mortar	kg	2738.00
112	Epoxy resin -hardener mix for seal coat.	kg	1784.00
113	Quick setting compound	kg	106.00
114	Acrylic polymer bonding coat	Litre	289.00
115	pre-packed cement based polymer mortar of strength 45 Mpa at 28 days	kg	17.00
116	Epoxy resin with pot life not less than 60-90 minutes and satisfying testing as per clause 2803.9	kg	1796.00
117	HTS strand including 5 per cent wastage and extra length for jacking	tonne	138583.00
118	HDPE pipes 90 mm dia including 5 per cent wastage	metre	264.00
119	HDPE pipes 75mm dia including 5 per cent wastage	metre	218.00
120	Tube anchorage set complete with bearing plate, permanent wedges etc	each	481.00
121	MS plates for deviator (where deviator blocks are not provided)	tonne	58919.00
122	v) Wooden packing	cum	57606.00
123	MS Bolt and nuts	kg	8590.00
124	Polyester trinagular synthetic fibres	kg	427.00
125	Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	sqm	189.00
126	Permeable synthetic geotextile including 5 per cent for overlap and wastage	sqm	178.00
127	4mm GI wire crates woven in mesh size of 100 mm x 100 mm.	sqm	191.00
128	Admixture @ 0.4 per cent of cement	kg	160.00
129	H.T. Strand @ 9.42 kg/m including 2 per cent for wastage and extra length for jacking	tonne	138583.00
130	Sheathing duct ID 66 mm along with 5 per cent extra length $40 \times 1.05 = 42$ m.	metre	245.00
131	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	52236.00
132	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	410.00
133	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	7715.00
134	Pre-coated stone chips of 9.5 mm nominal size for skid resistance $= 72.46 \times 0.005/10 = 0.036$	cum	1100.00
135	Corrosion resistant Structural steel including 5 per cent wastage	Kg	115.00
136	GI pipe 100mm dia	metre	788.00
137	GI bolt 10 mm Dia	each	9.00
138	Galvanised MS flat clamp	each	176.00

Sr. No.	Description	Unit	Av. Rate
139	LDO for steam curing	Litre	59.00
140	Helical pipes 600mm diameter	metre	6927.00
141	Tie rods 20mm diameter	each	119.00
142	Galvanised M.S plate 200 mm wide,12 mm thick @ 94.20 kg/sqm including 5 per cent wastage	kg	78.00
143	Copper plate - 12m long x 250 mm wide	kg	834.00
144	20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	405.00
145	Premoulded joint filler 12 m long,20 mm thick and 300 mm deep.	sqm	1807.00
147	Polymer modified bitumen	kg	60.00
148	Galvanised structural steel plate 200 mm wide,6 mm thick, 12 m long (2.4 sqm) @ 47.10 kg/sqm including 5 per cent wastage	kg	103.00
149	Supply of elastomeric slab seal expansion joint assembly manufactured by using chloroprene, elastomer for elastomeric slab unit conforming to clause 915.1 of IRC: 83 (part II), complete as per approved drawings and standard specification conforming to clause 2606 of MoRT&H Specification	metre	8306.00
150	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	103.00
151	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	19244.00
152	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	21876.00
153	Supply of a modular strip/box seal joint assembly comprising of edge beams, central beam,2 modules chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative.	metre	24967.00
154	Supply of a modular box/box seal joint assembly containing 3 modules/cells and comprising of edge beams, two central beams, chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative.	metre	30353.00
155	Cast steel rocker bearing assembly of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	73472.00
156	Forged steel roller bearing of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	111803.00
157	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.	184472.00

Sr. No.	Description	Unit	Av. Rate
158	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.	91928.00
159	Supply of sliding plate bearing of 80 tonne design capacity complete as per drawings and Technical Specifications.	each.	56446.00
160	Pot type bearing assembly consisting of a metal piston supported by a disc, PTFE pads providing sliding surfaces against stainless steel mating together with cast steel assemblies/fabricated structural steel assemblies duly painted with all components as per clause 2006 and complete as per drawings and Technical Specifications.	each.	185583.00

Chapter-I:

Carriage of Materials

Preamble:

1. The provision of tipper has been made in hours where lead is known like disposal of the materials up to 1000 m. In case where lead is variable like carriage of hot mix or concrete mix from plant or earth from borrow areas, provision has been made in terms of tone-kilometer (t-km), which can be adopted as per actual conditions.
2. Provision has been made for a tractor trolley instead of tipper where dismantled materials of sorts or material having more volume as compared with weight are required to be transported. This arrangement will be economical.
3. The cost of carriage will vary depending upon the riding surface of the road. Provision has accordingly been made considering surface road, unsurfaced gravel roads and kutcha tracks.
4. Analysis for loading has been done both for manual and mechanical means for adoption as per actual situations.
5. Where loading is done by mechanical plant like H.M.P. or batching plant and there is automatic loading in tippers, provision of loading and un-loading has been made at the rate of 10 per cent of cost of carriage to account for time by the tipper for getting loaded at the plant and unloaded in the paver or otherwise at the site.
6. Although the market rates for supply of aggregate at site are generally taken for estimation purpose, rate for crushing of aggregate have also been analysed as most of the contractors prefer to crush their own aggregates in case of large projects exceeding Rs 50 crore in value.
7. The cost of material shall be evaluated considering the cost at crushing plants and cost of carriage including loading and unloading or the rates for supply at site depending upon system being followed at particular locations. These rates should be compared with the rates for own crushing and carriage by the construction agency.

CHAPTER-1

CARRIAGE OF MATERIALS

Item No.	Descriptions	Unit	Labour Rate	Through Rate
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)	cum	-	123.00
1.2	Loading and Unloading of Boulders by Manual Means	cum	-	117.00
1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking.	tonne	-	184.00
1.4	Cost of Haulage Excluding Loading and Unloading			
(i)	Surfaced Road	tonne /km	-	4.00
(ii)	Unsurfaced Gravelled Road	tonne.km	-	4.80
(iii)	Katcha Track and Track in river bed / nallah bed and choe bed.	tonne.km	-	9.80
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)	cum	373.00	1333.00
1.6	Crushing of stone aggregates 13.2 mm nominal size. (Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 13 mm nominal size.)	cum	7.00	1220.00
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.)	cum	6.00	1035.00
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.)	cum	6.00	1028.00

Chapter-2:

Foundation

Preamble:

1. Excavation for structure has been provided both by manual and mechanical means. The rate relevant to a particular situation may be adopted.
2. The earth excavated from foundation has been proposed to be backfilled and balance quantity utilized for road work locally except for marshy soil where disposal has been provided.
3. The rock foundations are required to be prepared which has been analysed.
4. In case rocks, excavation has been considered up to a depth of 3 m only.
5. Embedment of foundation in soft and hard rocks has been provided as required by the specifications.
6. Dewatering has been provided in excavations for foundations. In case dewatering is not required for a particular site condition, the same may be omitted.
7. Mixing of cement concrete has been considered both by using concrete mixer and batching plant. The rate can be adopted depending upon availability of equipment as approved by the Engineer.
8. Concrete batching plant is generally placed within one km of the bridge site. In case of longer lead, transportation cost may be worked out based on tone km.
9. The coarse and fine aggregate for cement concrete shall be as per IS : 383.
10. Description of item has been given very briefly. Relevant clauses of M & T & H Specifications may be referred for detailed specifications.
11. The rate analysis for well foundation has been included for diameter varying from 6 m to 12 m. Well for twin D-type has also been included.
12. Pneumatic sinking is a specialized job. All safety precaution as per IS : 4138 are required to be taken. Medical Supervision for such work is considered very essential. Depth of pneumatic sinking has been restricted to 30 m below normal water level.
13. Rate analysis for various types of piles like bored cast-in-situ, driven precast, RCC & steel piles of H-section have been included. If the steel casing in case of driven piles is required to be retained, the same is required to be priced separately.

14. Pipe driving rigs including vibratory hammers are assumed to be self contained with power units and necessary accessories required for driving.
15. The quantity of concrete which is required to be stripped off up to a minimum height of 600 mm above the designed top level of the pile has been taken into account in the rate analysis.
16. The amount indicated for testing of piles is for the base year 2001-2002. For subsequent years, these are required to be escalated depending upon market situation.
17. The leveling course below the pile cap is proposed with M 15 grade concrete.
18. Steel reinforcement for cement concrete works is required to be provided separately. The rate for the same has been analysed.
19. Appendix-4 of IRC : 78-2000 may be referred regarding precautions to be taken during sinking of wells.
20. In case of blasting, during sinking of wells, the inner face of the curb is required to be protected with the steel plates of thickness not less than 10 mm up to top level of well curb. For height above top of curb, the thickness of steel plate may be reduced to 6 mm. This extra height of steel lining should be limited to 3 m.
21. The concrete mix used in bottom plug shall have minimum cement content of 330 kg/cum and a slump of about 150 mm to permit easy flow of concrete through tremie to fill-up all cavities.
22. Necessary safety precautions shall be taken for excavation on open foundation for which guidance may be taken from IS:3764.
23. A leveling course of 100 mm thickness in M 10 (1 : 3 : 6) shall be provided before laying open foundations.
24. In case of open foundations in rock, dewatering shall not be permitted from the time of placing of concrete up to 24 hours after placement.
25. In case of open foundation in rock, the trenches around the footing shall be filled-up with concrete of M 15 grade up to a level of 0.6m for hard rock and 1.5 m for soft rock above the foundation level. The portion above this may be filled by boulders grouted with cement.
26. When there are two or more compartments in a well, the lower edge of the cutting edge of the middle stem of such wells shall be kept about 300 mm above that of outer stems to prevent rocking.
27. The well curb shall be in RCC of mix not leaner than M 25 grade with minimum steel reinforcement of 72 kg/cum excluding bond rods.

28. The top of the bottom plug shall be at least 300 mm above top of curb.
29. No dewatering shall be carried out within 7 days of casting of bottom plug.
30. In case of cement concrete piles, the minimum grade of concrete shall be M 35 with minimum cement concrete of 400 kg/cum.
31. The top of the pile shall project 50 mm into the pile cap and reinforcement of pile shall be fully anchored in pile cap.
32. The minimum thickness of pile cap should be at least 0.6 m or 1.5 times the diameter of the pile whichever is more.
33. Guidance for piles is to be obtained from IS :2911.
34. Concrete in driven cast-in-situ piles shall be cast up to a minimum height of 600 mm above the designed top level of piles, which shall be stripped off to obtain sound concrete either before final set or after 3 days.

CHAPTER-2
FOUNDATIONS

Item No.	Descriptions	Unit	Labour Rate	Through Rate
2.1	Excavation for Structures (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)			
I	Ordinary soil			
A	Manual Means			
(i)	upto 3 m depth	cum	93.00	93.00
(ii)	3 m to 6 m depth	cum	120.00	120.00
(iii)	Above 6 m depth	cum	160.00	160.00
B	Mechanical Means			
(i)	Depth upto 3 m	cum	9.00	65.00
(ii)	Depth 3 m to 6 m	cum	10.00	75.00
(iii)	Depth above 6m	cum	15.00	90.00
II	Ordinary rock (not requiring blasting)			
A	Manual Means			
(i)	Depth upto 3 m	cum	133.00	133.00
B	Mechanical Means	cum	9.00	84.00
III	Hard rock (requiring blasting)			
A	Manual Means	cum	235.00	361.00
IV	Hard rock (blasting prohibited)			
A	Mechanical Means	cum	133.00	474.00
V	Marshy soil			
(i)	upto 3 m depth			
A	Manual means	cum	267.00	456.00
B	Mechanical Means	cum	53.00	120.00
VI	Back Filling in Marshy Foundation Pits	cum	133.00	370.00
2.2	Filling Annular Space Around Footing in Rock (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per items 3.4.)	cum	293.00	4992.00
2.3	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	80.00	1709.00
2.4	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.)	cum	293.00	4992.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
2.5	Brick masonry work in cement mortar 1:3 in foundation complete excluding pointing and plastering, as per drawing and technical specifications	cum	7046.00	7790.00
2.6 A	Sub analysis for cement mortar	cum		5274.00
2.7	Stone masonry work in cement mortar 1:3 in foundation complete as drawing and Technical Specification			
(a)	Square Rubble Coursed rubble masonry(first sort)	cum	883.00	4912.00
(b)	Random Rubble Masonry	cum	956.00	4783.00
2.8	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications			
A	PCC Grade M15	cum	395.00	5525.00
B	PCC Grade M20	cum	391.00	6315.00
C	RCC Grade M20			
Case I	Using concrete mixer	cum	391.00	6443.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	6919.00
D	PCC Grade M25			
Case I	Using concrete Mixer	cum	391.00	6839.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7318.00
E	RCC Grade M25			
Case I	Using concrete Mixer	cum	395.00	6977.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7449.00
F	PCC Grade M30			
Case I	Using Concrete Mixer	cum	395.00	6881.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7353.00
G	RCC Grade M30			
Case I	Using Concrete Mixer	cum	395.00	6989.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7465.00
H	RCC Grade M35			
Case I	Using Concrete Mixer	cum	395.00	7104.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7577.00
2.9	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 1.25m.	each	3952.00	53574.00
B	Assuming depth of water 4.0 m and height of island 4.5 m.	each	37367.00	465170.00
C	Providing and constructing one span service road to reach island location from one pier location to another pier location	metre	53.00	3267.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
2.10	Providing and laying cutting edge of mild steel weighing 40 kg per metre for well foundation complete as per drawing and technical specification.	tonne	10549.00	83576.00
2.11	Plain/Reinforced cement concrete, in well foundation complete as per drawing and technical specification			
A	Well curb			
(i)	RCC M20 Grade			
Case I	Using concrete mixer	cum	325.00	7435.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	7985.00
(ii)	RCC M25 Grade			
Case I	Using concrete mixer	cum	310.00	8067.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	8985.00
(iii)	RCC M35 Grade			
Case I	Using concrete mixer	cum	325.00	8277.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	9123.00
B	Well steining			
(I)	PCC M15 Grade			
Case I	Using concrete mixer	cum	328.00	5844.00
(ii)	PCC M20 Grade			
Case I	Using concrete mixer	cum	325.00	6680.00
(iii)	RCC M20 Grade			
Case I	Using concrete mixer	cum	325.00	6816.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	7320.00
(iv)	PCC M25 Grade			
Case I	Using concrete mixer	cum	325.00	7251.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	7759.00
(v)	RCC M25 Grade			
Case I	Using concrete mixer	cum	310.00	7395.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	8155.00
(vi)	PCC M30 Grade			
Case I	Using concrete mixer	cum	325.00	7313.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	7816.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(vii)	RCC M30 Grade			
Case I	Using concrete mixer	cum	325.00	7429.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	7934.00
(viii)	RCC M35 Grade			
Case I	Using concrete mixer	cum	310.00	7587.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	8446.00
(ix)	RCC M40 Grade			
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	8535.00
C	Bottom Plug			
(i)	PCC Grade M20			
Case I	Using Concrete Mixer	cum	396.00	7302.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	50.00	7393.00
(ii)	PCC Grade M25			
Case I	Using Concrete Mixer	cum	396.00	7632.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	50.00	7719.00
(iii)	PCC Grade M30			
Case I	Using Concrete Mixer	cum	396.00	7691.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	50.00	7782.00
(iv)	PCC Grade M35			
Case I	Using Concrete Mixer	cum	396.00	7829.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	50.00	7916.00
D	Intermediate plug			
(I)	Grade M20 PCC			
Case I	Using Concrete Mixer	cum	322.00	6932.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	40.00	7105.00
(ii)	Grade M25 PCC			
Case I	Using Concrete Mixer	cum	325.00	7315.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	40.00	7416.00
(iii)	Grade M30 PCC			
Case I	Using Concrete Mixer	cum	325.00	7372.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	40.00	7474.00
E	Top plug			
(i)	Grade M15 PCC			
Case I	Using Concrete Mixer	cum	325.00	5312.00
(ii)	Grade M20 PCC			
Case I	Using Concrete Mixer	cum	325.00	6073.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(iii)	Grade M25 PCC			
Case I	Using Concrete Mixer	cum	325.00	6592.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	40.00	7054.00
(iv)	Grade M30 PCC			
Case I	Using Concrete Mixer	cum	325.00	6648.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	40.00	7105.00
F	Well cap			
(i)	RCC Grade M20			
Case I	Using concrete Mixer	cum	325.00	6385.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	6859.00
(ii)	RCC Grade M25			
Case I	Using concrete Mixer	cum	325.00	6974.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	7450.00
(iii)	RCC Grade M30			
Case I	Using Concrete Mixer	cum	212.00	6989.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	7464.00
(iv)	RCC Grade M35			
Case I	Using Concrete Mixer	cum	325.00	7104.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	7577.00
(v)	RCC M40 Grade			
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	40.00	8040.00
2.12	Sinking of 6 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.			
A	Sandy soil			
(i)	Depth below bed level upto 3.0 M	metre	793.00	3263.00
(ii)	Beyond 3m upto 10m depth	metre	1001.00	4695.00
(iii)	Beyond 10m upto 20m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	1322.00	6202.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2479.00	11634.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	2975.00	13960.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	5891.00	27640.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	7069.00	33168.00
B	Clayey soil (6m dia. Well)			
(i)	Depth below bed level upto 3.0 M	metre	1001.00	4695.00
(ii)	Beyond 3m upto 10m depth	metre	2002.00	10640.00
(iii)	Beyond 10 m upto 20 m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2644.00	14053.00
b	Add for dewatering @ 5% of cost, if required.	metre	2776.00	14756.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	4961.00	40209.00
b	Add 5% of cost for dewatering of the cost, if required	metre	6511.00	52775.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	6201.00	50262.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	11787.00	95532.00
b	Add 5% of cost for dewatering, if required	metre	14851.00	120370.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	14851.00	114638.00
C	Soft rock (6m dia well)			
(i)	Depth of soft rock strata upto 3m	metre	6306.00	14091.00
D	Hard rock (6m dia well)			
(i)	Depth of soft rock strata upto 3m	metre	5930.00	15216.00
2.13	Sinking of 7 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.			
A	Sandy soil			

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(i)	Depth below bed level upto 3.0 M	metre	526.00	4961.56
(ii)	Beyond 3m upto 10m depth	metre	1201.00	6742.00
(iii)	Beyond 10m upto 20m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	1587.00	8904.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2978.00	16701.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour) .	metre	3574.00	20041.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	7078.00	39680.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	8493.00	47615.00
B	Clayey soil (7m dia. Well)			
(I)	Depth below bed level upto 3.0 M	metre	1201.00	6742.00
(ii)	Beyond 3m upto 10m depth	metre	1607.00	9734.00
(iii)	Beyond 10 m upto 20 m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2123.00	12855.00
b	Add for dewatering @ 5% of cost, if required.	metre	2229.00	13498.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	3982.00	24112.00
b	Add 5% of cost for dewatering on the cost, if required	metre	5227.00	31647.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour) .	metre	4978.00	30140.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	9462.00	57287.00
b	Add 5% of cost for dewatering, if required	metre	11922.00	72182.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		11354.00	68745.00
C	Soft rock (7m dia well)			
(i)	Depth of soft rock strata upto 3m	metre	2224.00	12437.00
D	Hard rock (7m dia well)			

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(i)	Depth upto 3 m	metre	6817.00	17687.00
2.14	Sinking of 8 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.			
A	Sandy soil			
(i)	Depth below bed level upto 3.0 M	metre	3356.00	6127.00
(ii)	Beyond 3m upto 10m depth	metre	1334.00	7568.00
(iii)	Beyond 10m upto 20m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	1762.00	9995.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2679.00	18748.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	3215.00	22498.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	6365.00	44543.10
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	7638.00	53452.00
B	Clayey soil (8m dia. Well)			
(i)	Depth upto 3.0 M	metre	1468.00	8241.00
(ii)	Beyond 3m upto 10m depth	metre	1879.00	11455.00
(iii)	Beyond 10 m upto 20 m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2482.00	15128.00
b	Add for dewatering @ 5% of cost, if required.	metre	2607.00	15884.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	4657.00	28376.00
b	Add 5% of cost for dewatering on the cost, if required	metre	6112.00	37244.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	5821.00	35470.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	11064.00	67418.00
b	Add 5% of cost for dewatering, if required	metre	13941.00	84947.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	13277.00	80902.00
C	Soft rock (8m dia well)			
(i)	Depth in soft rock strata upto 3m	metre	4616.00	13773.00
D	Hard rock (8m dia well)			
(i)	Depth in hard rock strata upto 3 m	metre	3911.00	17916.00
2.15	Sinking of 9 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.			
A	Sandy soil			
(i)	Depth below bed level upto 3.0 M	metre	1268.00	6193.00
(ii)	Beyond 3m upto 10m depth	metre	858.00	8318.00
(iii)	Beyond 10m upto 20m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	1133.00	10985.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2127.00	20603.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	2552.00	24724.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	5053.00	48950.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	6064.00	58740.00
B	Clayey soil (9m dia. Well)			
(i)	Depth below bed level upto 3.0 M	metre	1601.00	8682.00
(ii)	Beyond 3m upto 10m depth	metre	2012.00	12360.00
(iii)	Beyond 10 m upto 20 m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2658.00	16323.00
b	Add for dewatering @ 5% of cost, if required.	metre	2791.00	17139.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	4985.00	30619.00
b	Add 5% of cost for dewatering on the cost, if required	metre	6543.00	40187.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	6232.00	38274.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	11843.00	72747.00
b	Add 5% of cost for dewatering, if required	metre	14922.00	91661.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	14211.00	87296.00
C	Soft rock (9m dia well)			
(i)	Depth upto 3m	metre	5217.00	17293.00
D	Hard rock (9m dia well)			
(i)	Depth of hard rock strata upto 3 m	metre	7900.00	20785.00
2.16	Sinking of 10 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.			
A	Sandy soil			
(i)	Depth below bed level upto 3.0 M	metre	1335.00	7491.00
(ii)	Beyond 3m upto 10m depth	metre	1684.00	8764.00
(iii)	Beyond 10m upto 20m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2223.00	11574.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	4169.00	21710.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	5003.00	26052.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	9906.00	51578.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	11887.00	61894.00
B	Clayey soil (10m dia. Well)			
(i)	Depth below bed level upto 3.0 M	metre	2117.00	9506.00
(ii)	Beyond 3m upto 10m depth	metre	2284.00	12173.00
(iii)	Beyond 10 m upto 20 m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	3017.00	16076.00
b	Add for dewatering @ 5% of cost, if required.	metre	3168.00	16880.00
(iv)	Beyond 20m upto 30 m			

Item No.	Descriptions	Unit	Labour Rate	Through Rate
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	5660.00	30155.00
'b	Add 5% of cost for dewatering on the cost, if required	metre	7429.00	39579.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	7075.00	37694.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	13448.00	71643.00
b	Add 5% of cost for dewatering, if required	metre	16944.00	90271.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		16137.00	85972.00
C	Soft rock (10m dia well)			
(i)	Depth of soft rock strata upto 3m	metre	5823.00	17663.00
D	Hard rock (10m dia well)			
(i)	Depth of hard rock strata upto 3 m	metre	8104.00	24052.00
2.17	Sinking of 11 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.			
A	Sandy soil			
(i)	Depth from bed level upto 3.0 M	metre	1286.00	17348.00
(ii)	Beyond 3m upto 10m depth	metre	1750.00	13352.00
(iii)	Beyond 10m upto 20m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2312.00	17633.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	4337.00	33074.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	5204.00	39689.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	10304.00	78577.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	12365.00	94293.00
B	Clayey soil (11 m dia. Well)			

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(i)	Depth from bed level upto 3.0 M	metre	1735.00	15784.00
(ii)	Beyond 3m upto 10m depth	metre	2484.00	25059.00
(iii)	Beyond 10 m upto 20 m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	3281.00	33095.00
b	Add for dewatering @ 5% of cost, if required.	metre	3445.00	34749.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	6155.00	62076.00
b	Add 5% of cost for dewatering on the cost, if required	metre	8079.00	81476.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	7694.00	77596.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	14623.00	147485.00
b	Add 5% of cost for dewatering, if required	metre	18425.00	185830.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	17547.00	176981.00
C	Soft rock (11m dia well)			
(i)	Depth of soft rock strata upto 3m	metre	6457.00	39508.00
D	Hard rock (11m dia well)			
(i)	Depth of hard rock upto 3 m	metre	8638.00	54077.00
2.18	Sinking of 12 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.			
A	Sandy soil			
(i)	I) Depth below bed level upto 3.0 M	metre	1532.00	35682.00
(ii)	Beyond 3m upto 10m depth	metre	1956.00	39839.00
(iii)	Beyond 10m upto 20m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	2584.00	52615.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	4847.00	98691.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	5816.00	118429.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	11516.00	234474.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	13819.00	281369.00
B	Clayey soil (12 m dia. Well)			
(i)	Depth below bed level upto 3.0 M	metre	2002.00	38792.00
(ii)	Beyond 3m upto 10m depth	metre	2625.00	62783.00
(iii)	Beyond 10 m upto 20 m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	3468.00	82918.00
b	Add for dewatering @ 5% of cost, if required.	metre	3641.00	87064.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	6507.00	155532.00
b	Add 5% of cost for dewatering on the cost, if required	metre	8541.00	204136.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	8134.00	194415.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	15459.00	369522.00
b	Add 5% of cost for dewatering, if required	metre	19478.00	465598.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	18551.00	443426.00
C	Soft rock (12m dia well)			
(i)	Depth of soft rock strata upto 3m	metre	7146.00	92774.00
D	Hard rock (12m dia well)			
(i)	Depth of hard rock strata upto 3 m	metre	9303.00	123448.00
2.19	Sinking of Twin D Type well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.			
A	Sandy soil			
(i)	Depth from bed level upto 3.0 M	metre	1335.00	8107.00
(ii)	Beyond 3m upto 10m depth	metre	1421.00	8729.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(iii)	Beyond 10m upto 20m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	1876.00	11529.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	3521.00	21623.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	4225.00	25948.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	8366.00	51377.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	10039.00	61653.00
B	Clayey soil (Twin D Type Well)			
(i)	Depth below bed level upto 3.0 M	metre	1735.00	9431.00
(ii)	Beyond 3m upto 10m depth	metre	2489.00	13516.00
(iii)	Beyond 10 m upto 20 m			
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	3288.00	17851.00
b	Add for dewatering @ 5% of cost, if required.	metre	3452.00	18743.00
(iv)	Beyond 20m upto 30 m			
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	6167.00	33483.00
b	Add 5% of cost for dewatering on the cost, if required	metre	8094.00	43946.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	7708.00	41854.00
(v)	Beyond 30m upto 40 m			
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	14651.00	79551.00
b	Add 5% of cost for dewatering, if required	metre	18461.00	100234.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	17582.00	95461.00
C	Soft rock (Twin D Type well)			
(i)	Depth of soft rock strata upto 3m	metre	5728.00	20436.00
D	Hard rock (Twin D Type well)			
(i)	Depth of hard rock strata upto 3 m	metre	8443.00	25786.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
2.20	Pneumatic sinking of wells with equipment of approved design, drawing and specifications worked by competent and trained personnel and comprising of compression and decompression chambers, reducers, two air locks separately for men and plant & materials, arrangement for supply of fresh air to working chambers, check valves, exhaust valves, shafts made from steel plates of riveted construction not less than 6 mm thick to withstand an air pressure of 0.50 MPa, controlled blasting of hard rock where required, staircases and 1 m wide landing plate forms with railing, arrangement for compression and decompression, electric lighting of 50 V maximum, proper rooms for rest and medical examinations and compliance with safety precautions as per IS:4138, all as per clause 1207.6 of MoRTH Specifications.	cum	2927.00	113070.00
2.21	Sand filling in wells complete as per drawing and technical specifications	cum	76.00	1709.00
2.22	Providing steel liner 10 mm thick for curbs and 6mm thick for steining of wells including fabricating and setting out as per detailed drawing	tonne	8065.00	75568.00
12.23	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)	metre	80.00	12180.00
2.24	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)	metre	139.00	20617.00
2.25	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)	metre	179.00	26028.00
2.26	Driven cast-in-place vertical M35 grade R.C.C. pile excluding reinforcement complete as per drawing and & Technical Specification (Pile diameter - 750 mm)	metre	38.00	5304.00
2.27	Driven cast-in-place vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile diameter - 1000 mm)	metre	67.00	8654.00
2.28	Driven cast-in-place vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile diameter - 1200 mm)	metre	71.00	12587.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
2.29	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=500 mm)	metre	21.00	2767.00
2.30	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=750 mm)	metre	39.00	4611.00
2.31	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=1000 mm)	metre	65.00	7707.00
2.32	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Size of pile - 300 mm x 300 mm)	metre	35.00	1904.00
2.33	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Size of pile - 500 mm x 500 mm)	metre	45.00	3113.00
2.34	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Size of pile - 750 mm x 750 mm)	metre	62.00	5812.00
2.35	Driven vertical steel piles complete as per drawing and & Technical Specification (Section of the pile - H Section steel column 400 x 250 mm (ISHB Series))	metre	39.00	5601.00
2.36	Driven vertical steel piles complete as per drawing and & Technical Specification (Section of the pile - H Section steel column 450 x 250 mm (ISHB Series))	metre	47.00	6321.00
2.37	Pile load test on single vertical pile in accordance with IS:2911(Part-IV)			
2.38	Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification			
A	RCC Grade M20			
(i)	Using Concrete Mixer	cum	406.00	6396.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	71.00	6901.00
B	RCC Grade M25			
(i)	Using concrete mixer.	cum	406.00	6963.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	71.00	7468.00
C	RCC Grade M30			
(i)	Using concrete mixer.	cum	402.00	7034.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	71.00	7539.00
D	RCC Grade M35			
(i)	Using concrete mixer.	cum	406.00	7184.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	71.00	7689.00
2.39	Levelling course for Pile cap	cum	389.00	5374.00
2.40	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specifications	tonne	2412.00	75998.00
2.41	Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification	tonne	2645.00	70683.00

Chapter-3:

Substructure

Preamble:

1. Although, Substructure are generally constructed in cement concrete, the rate analysis for brick and stone masonry in CM 1:3 have also been included which can be adopted if permitted by design.
2. The cost of formwork will vary with the height of the substructure. Provision has accordingly been made.
3. As the higher grade of concrete is costlier, the provision made for formwork on percentage basis has been suitably adjusted to make it comparable with other grades.
4. Bridge bearings being commercial items produced by specialized firms with imported technology and parts, the rates for the same are required to be ascertained from the market for the approved design and technical specifications.
5. Filter media and backfilling behind abutments are required to be provided as per guidelines given in IRC: 78-2000.
6. Weep holes shall be provided as per Clause 2706 of MORT & H Specification.
7. In case of roller-cum rocker bearings, only full circular rollers are to be provided.
8. All bearings shall be set truly level so as to have full and even seating.
9. For elastomeric bearings, the concrete surface shall be leveled such that the variation is not more than 1.5 mm from a straight edge placed in any direction across the area.
10. The bearing should be procured only from those manufacturers who have been pre-qualified by the Ministry of Road Transport and Highways.
11. The bottom of girders resting on the bearing shall be plane and truly horizontal.
12. For spans in grade, the bearing shall be placed horizontal by using sole plates for suitably designed RCC pedestals.

CHAPTER-3
SUB-STRUCTURE

Item No.	Descriptions	Unit	Labour Rate	Through Rate
3.1	Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and technical specifications	cum	808.00	15908.00
3.2	Pointing with cement mortar (1:3) on brick work in substructure as per Technical specifications	sqm	232.00	524.00
3.3	Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical specifications	sqm	220.00	1259.00
3.4	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications			
A	Random Rubble Masonry	cum	835.00	4840.00
B	Coursed rubble masonry (first sort)	cum		4945.00
C	Ashlar masonry (first sort)	cum		6189.00
3.5	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications			
A	PCC Grade M15			
(p)	Height upto 5m	cum	224.00	5844.00
B	PCC Grade M20			
(p)	Height upto 5m	cum	224.00	6680.00
C	PCC Grade M25			
(p)	Height upto 5m			
Case I	Using concrete Mixer	cum	224.00	7179.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7759.00
(q)	Height 5m to 10m			
Case I	Using concrete Mixer	cum	224.00	7515.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8042.00
(r)	Height above 10m			
Case I	Using concrete Mixer	cum	224.00	7844.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8394.00
D	PCC Grade M30			

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(p)	Height upto 5m			
Case I	Using concrete Mixer	cum	224.00	7313.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7816.00
(q)	Height 5m to 10m			
Case I	Using concrete Mixer	cum	224.00	7579.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8100.00
(r)	Height above 10m			
Case I	Using concrete Mixer	cum	224.00	7911.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8455.00
E	RCC Grade M20			
(p)	Height upto 5m			
Case I	Using concrete Mixer	cum	224.00	6816.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7320.00
(q)	Height 5m to 10m			
Case I	Using concrete Mixer	cum	224.00	7063.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7586.00
(r)	Height above 10m			
Case I	Using concrete Mixer	cum	224.00	7373.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7919.00
F	RCC Grade M25			
(p)	Height upto 5m			
Case I	Using concrete Mixer	cum	224.00	7395.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8237.00
(q)	Height 5m to 10m			
Case I	Using concrete Mixer	cum	224.00	7637.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8506.00
(r)	Height above 10m			

Item No.	Descriptions	Unit	Labour Rate	Through Rate
Case I	Using concrete Mixer	cum	224.00	8000.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8910.00
G	RCC Grade M30			
(p)	Height upto 5m			
Case I	Using concrete Mixer	cum	224.00	7429.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	7934.00
(q)	Height 5m to 10m			
Case I	Using concrete Mixer	cum	224.00	7638.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8158.00
(r)	Height above 10m			
Case I	Using concrete Mixer	cum	224.00	7935.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8475.00
H	RCC Grade M35			
(p)	Height upto 5m			
Case I	Using concrete Mixer	cum	224.00	7587.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8446.00
(q)	Height 5m to 10m			
Case I	Using concrete Mixer	cum	224.00	7753.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8631.00
(r)	Height above 10m			
Case I	Using concrete Mixer	cum	224.00	8001.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	50.00	8907.00
3.6	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	tonne	2525.00	76111.00
3.7	Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and technical specification	tonne		70099.00
3.8	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing face. Complete as per drawing and Technical specifications	each		1063.00
3.9	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification			
A	Granular material	cum		766.00
B	Sandy material	cum		1844.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
3.1	Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and technical specification.	cum		1319.00
3.11	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.	tonne capacity		364.00
3.12	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.	tonne capacity		554.00
3.13	Supplying, fitting and fixing in position true to line and level sliding plate bearing with PTFE surface sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clause 2004 of MoRTH Specifications.	tonne capacity		2851.00
3.14	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.	cubic centimet re		6.00
3.15	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.	tonne capacity		875.00
3.16	Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete as per drawing and approved technical specifications.	tonne capacity		918.00

Chapter-4:

Superstructure

Preamble:

1. The rate for the wearing coat has been analysed as under:
 - a) Cement concrete wearing coat.
 - b) Asphaltic concrete wearing coat.
 - c) Bitumen mastic wearing coat.

The item may be selected as per approved design. In case the thickness of wearing coat is different from that analysed, the rate for the desired thickness may be worked out on pro-rata basis

2. The rate analysis has been done both for RCC railing and M.S. Railing, which can be adopted as per approved design.
3. The length of drainage spout has been provided in such a way that it is connected to the drainage system on the ground in case of Flyovers and there is no splashing of water on the structure in case of bridges
4. The rate for anti-corrosive treatment is required to be ascertained from firm specialized in this concern Circular No. R.W./NH-34041/44/91 S&R dated 21-03-2000 of Ministry of Road Transport and Highways may be referred for further details
5. Expansion joints involving movements exceeding 40 mm are specialized ready made items commercially produced by reputed firms with imported technology and parts. The rates for such joints are required to be ascertained from the firm so pre-qualified by the Ministry.
6. The rate analysis for pre-cast and pre-tensioned girders has also been included.
7. The rate analysis for prestressed cement concrete of M-60 grade also been included which can be adopted for bridges with innovative design / construction.
8. M.O.T & H letter No. R.W./NH-34059/1/96 S&R dated 1.1.2000 and subsequent corrigendum dated 25.1.2001 may be referred for detailed specifications and provisions for various types of expansion joints
9. Supply of new type of expansion joints may be obtained on the basis of competitive bidding from amongst the suppliers pre-qualified by the Ministry of Road Transport and Highways. Further, a warranty of 10 years of trouble free performance may be insisted from the suppliers
10. For bridge, having wide deck/span length of more than 120 m or/and involving complex movements/ rotations in different directions/ planes, provision of special type of modular expansion joints such as swivel joints are required for which specialized in this field may be consulted. Such cases will require prior approval of Ministry.

CHAPTER-4
SUPER-STRUCTURE

Item No.	Descriptions	Unit	Labour Rate	Through Rate
4.1	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)	For solid slab super-structure, 20-30% of (a+b+c)			
(p)	Height upto 5m	cum		7367.00
(q)	Height 5m to 10m	cum		7674.00
(r)	Height above 10m	cum		7981.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)			
(p)	Height upto 5m	cum		7674.00
(q)	Height 5m to 10m	cum		7981.00
(r)	Height above 10m	cum		8288.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump			
(i)	For solid slab super-structure, 20-30% of (a+b+c)			
(p)	Height upto 5m	cum		7914.00
(q)	Height 5m to 10m	cum		8244.00
(r)	Height above 10m	cum		8574.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)			
(p)	Height upto 5m	cum		8244.00
(q)	Height 5m to 10m	cum		8574.00
(r)	Height above 10m	cum		8904.00
B	RCC Grade M25			
Case I	Using Concrete Mixer			
(i)	For solid slab super-structure, 20-30% of (a+b+c)			
(p)	Height upto 5m	cum		8021.00
(q)	Height 5m to 10m	cum		8355.00
(r)	Height above 10m	cum		8689.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)			
(p)	Height upto 5m	cum		8355.00
(q)	Height 5m to 10m	cum		8689.00
(r)	Height above 10m	cum		9023.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump			

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(i)	For solid slab super-structure, 20-30% of (a+b+c)			
(p)	Height upto 5m	cum		8578.00
(q)	Height 5m to 10m	cum		8935.00
(r)	Height above 10m	cum		9292.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)			
(p)	Height upto 5m	cum		8935.00
(q)	Height 5m to 10m	cum		9292.00
(r)	Height above 10m	cum		9650.00
C	RCC Grade M 30			
Case I Using Concrete Mixer				
(i)	For solid slab super-structure, 20-30% of (a+b+c)			
(p)	Height upto 5m	cum		8125.00
(q)	Height 5m to 10m	cum		8463.00
(r)	Height above 10m	cum		8802.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)			
(p)	Height upto 5m	cum		8463.00
(q)	Height 5m to 10m	cum		8802.00
(r)	Height above 10m	cum		9141.00
Case II Using Batching Plant, Transit Mixer and Concrete Pump.				
(i)	For solid slab super-structure, 20-30% of (a+b+c)			
(p)	Height upto 5m	cum		8665.00
(q)	Height 5m to 10m	cum		9026.00
(r)	Height above 10m	cum		9387.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)			
(p)	Height upto 5m	cum		9026.00
(q)	Height 5m to 10m	cum		9387.00
(r)	Height above 10m	cum		9748.00
D	RCC/PSC Grade M35			

Case 1 Using concrete mixer.

- (i) For solid slab super-structure, 18-28% of (a+b+c)

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(p)	Height upto 5m	cum		8159.00
(q)	Height 5m to 10m	cum		8505.00
(r)	Height above 10m	cum		8851.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)			
(p)	Height upto 5m	cum		8505.00
(q)	Height 5m to 10m	cum		8851.00
(r)	Height above 10m	cum		9197.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.			
(p)	Height upto 5m	cum		9542.00
(q)	Height 5m to 10m	cum		10234.00
(r)	Height above 10m	cum		10925.00
Case II Using Batching Plant, Transit Mixer and Concrete Pump				
(i)	For solid slab super-structure, 18-28% of (a+b+c)			
(p)	Height upto 5m	cum		8683.00
(q)	Height 5m to 10m	cum		9051.00
(r)	Height above 10m	cum		9419.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)			
(p)	Height upto 5m	cum		9051.00
(q)	Height 5m to 10m	cum		9419.00
(r)	Height above 10m	cum		9787.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.			
(p)	Height upto 5m	cum		10155.00
(q)	Height 5m to 10m	cum		10891.00
(r)	Height above 10m	cum		11627.00
E	PSC Grade M-40			
Case 1 Using concrete mixer.				
(i)	For solid slab super-structure, 20-30% of (a+b+c)			
(p)	Height upto 5m	cum		8819.00
(q)	Height 5m to 10m	cum		9186.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(r)	Height above 10m	cum		9553.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)			
(p)	Height upto 5m	cum		9186.00
(q)	Height 5m to 10m	cum		9553.00
(r)	Height above 10m	cum		9921.00
Case II Using Batching Plant, Transit Mixer and Concrete Pump				
(i)	For solid slab super-structure, 18-28% of (a+b+c)			
(p)	Height upto 5m	cum		9163.00
(q)	Height 5m to 10m	cum		9552.00
(r)	Height above 10m	cum		9940.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)			
(p)	Height upto 5m	cum		9552.00
(q)	Height 5m to 10m	cum		9940.00
(r)	Height above 10m	cum		10328.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.			
(p)	Height upto 5m	cum		10716.00
(q)	Height 5m to 10m	cum		11493.00
(r)	Height above 10m	cum		12269.00
F	PSC Grade M-45			
(i)	For solid slab/voided slab super-structure, 16-26% of cost of concrete (a+b+c)			
(p)	Height upto 5m	cum		9420.00
(q)	Height 5m to 10m	cum		9826.00
(r)	Height above 10m	cum		10232.00
(ii)	For T-beam & slab including launching of precast girders by launching truss upto 40 m span, 21-31% of cost of concrete.			
(p)	Height upto 5m	cum		9826.00
(q)	Height 5m to 10m	cum		10232.00
(r)	Height above 10m	cum		10639.00
(iii)	For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56% of cost of concrete.			
(p)	Height upto 5m	cum		11045.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
(q)	Height 5m to 10m	cum		11857.00
(r)	Height above 10m	cum		12669.00
G	PSC Grade M-50			
(i)	For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55% of cost of concrete			
(p)	Height upto 5m	cum		11306.00
(q)	Height 5m to 10m	cum		12144.00
(r)	Height above 10m	cum		12981.00
H	PSC Grade M- 55			
(i)	For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55% of cost of concrete			
(p)	Height upto 5m	cum		11843.00
(q)	Height 5m to 10m	cum		12721.00
(r)	Height above 10m	cum		13598.00
4.2	a) Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications	tonne		77110.00
4.3	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications	tonne		201356.00
4.4	Providing and laying Cement concrete wearing coat, M-30 grade including reinforcement complete as per drawing and Technical Specifications	cum		13042.00
4.5	Mastic Asphalt (Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm		445.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
4.6	Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	metre		2138.00
4.7	Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	metre		2079.00
4.8	Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specifications	metre		3066.00
4.9	Drainage Spouts complete as per drawing and Technical specifications	each		6098.00
4.10	PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specifications	cum		11213.00
4.11	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification	cum		11213.00
4.12	Providing anti-corrosive treatment to HYSD reinforcement with Fusion Bonded Epoxy Coating (FBEC) (To be taken as per the prevailing market rates.)	tonne		0.00
4.13	Precast - pretensioned Girders (Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawing and technical specifications)	cum		32137
4.14	Providing and fixing Helical pipes in voided concrete slabs	metre		9087.00
4.15	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.)	0		0.00
4.16	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 Sq.m.)	sqm		259.00
4.17	Buried Joint (Providing and laying a buried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised weldable structural steel plate as per IS: 2062, placed symmetrical to centre line of the joint, resting freely over the top surface of the deck concrete, welding of 8 mm dia. 100 mm long galvanised nails spaced 300 mm c/c along the centre line of the plate, all as specified in clause 2604.)	metre		1919.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
4.18	Filler joint			
(i)	Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.	metre		4693.00
(ii)	Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.	metre		128.00
(iii)	Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.	metre		669.00
(iv)	Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight	metre		20.00
4.19	Asphaltic Plug joint (Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of weldable structural steel conforming to IS: 2062, asphaltic plug to consist of polymer modified bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking/backer rod, all as per approved drawings and specifications.)	metre		1854.00
4.20	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 by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation and clause 2606 of MoRTH specifications for road & bridge works.)	metre		10692.00
4.21	Compression Seal Joint (Providing and laying of compression seal joint consisting of steel armoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and fixed into the joint gap with special adhesive binder to cater for a horizontal movement upto 40 mm and vertical movement of 3 mm.)	metre		28687.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
4.22	Strip Seal Expansion Joint (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre		28101.00
4.23	Modular Strip / Box Seal Joint (Providing and laying of a modular strip Box steel expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre		26766.00
4.24	Modular Strip / Box Seal Joint (Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre		30551.00

Chapter-5:

River Training and Protection works

Preamble:

1. Three types of apron on river beds as under have been catered:
 - a) Boulder apron laid dry.
 - d) Boulder apron laid in wire crates
 - e) Apron laid in cement concrete blocks M -45.
2. A toe wall for toe protection of pitching can be either in dry rubble masonry (uncoursed) or in nominal mix cement concrete M -45. Depending upon the design, the rates may be adopted under respective clauses
3. Flooring has been proposed in dry rubble stone rubble stone laid in C.M . 1:3 and with cement concrete blocks M -45.
4. Curtain walls proposed are of following two types
 - a) Course rubble stone masonry (1st sort) in CM 1:3
 - b) Cement concrete M -45 grade.
5. The rate analysis for gabion structures comprising of stone boulders laid in wire crates have been included. Such structures are suited as retaining structures and for erosion control in river training works especially for situations where some settlement of foundation is anticipated. These structures can adjust in minor settlements, being flexible structures without losing their functional requirement.

CHAPTER-5

RIVER TRAINING AND PROTECTION WORKS

Item No.	Descriptions	Unit	Labour Rate	Through Rate
5.1	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.	cum		1552.00
5.2	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% extra for laps and joints laid with stone boulders weighing not less than 40 kg each.)	cum		2332.00
5.3	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.)	cum		5579.00
5.4	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	cum		1552.00
B	Cement Concrete blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15	cum		5579.00
5.5	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum		1435.00
5.6	Geotextile Filter (Laying of a geotextile filter between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching.)	sqm		265.00
5.7	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 concrete block have been used for pitching . Rates for toe wall can be adopted from respective clauses depending upon approved design. The rate for excavation for foundation, dry rubble masonry and PCC M15 have been analysed and given in respective chapters.)		To be analysed	To be analysed
5.8	Providing and laying Flooring complete as per drawing and Technical specifications laid over cement concrete bedding.			

Item No.	Descriptions	Unit	Labour Rate	Through Rate
A	Rubble stone laid in cement mortar 1:3	cum		5421.00
B	Cement Concrete blocks Grade M15	cum		7348.00
5.9	Dry rubble Flooring	cum		1824.00
5.10	Curtain wall complete as per drawing and Technical specification			
A	Stone masonry in cement mortar (1:3)	cum		5052.00
B	Cement concrete Grade M15	cum		5470.00
5.11	Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.	cum		1596.00
5.12	Gabian Structure for Retaining Earth (Providing and construction of a gabain structure for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5 m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire)	cum		2481.00
5.13	Gabian Structure for Erosion Control, River Training Works and Protection works (Providing and constructing gabain structures for erosion control, river training works and protection works with wire crates of size 2 m x 1 m x 0.3 m each divided into 1m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be securely tied with 4 mm galvanised steel wire.)	cum		3873.00

Chapter-6:

Repair and Rehabilitation

Preamble:

1. Removal of cement concrete wearing coat and asphaltic wearing coat has been proposed with pneumatic breakers
2. The rate for external pre-stressing has been analysed for three different spans of 25, 50 and 100 m.
3. Sealing of cracks has been proposed with cement grout, cement mortar (1 : 1) grout and epoxy grout by injecting with grout pump through nipples
4. Bonding of new concrete with old concrete is proposed with epoxy resin.
5. The repair and replacement of following structures has been included:
 - A) Bridge bearings
 - B) Expansion Joints
 - C) Concrete Railing
 - D) Mild steel railing
 - E) Crash barrier.

CHAPTER-6

REPAIR AND REHABILITATION

Item No.	Descriptions	Unit	Labour Rate	Through Rate
6.1	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 1000m(Thickness 75 mm)	sqm		118.00
6.2	Removal of existing asphaltic wearing coat comprising of 50 mm thick asphaltic concrete laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000m.	sqm		91.00
6.3	Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical specification	sqm		938.00
6.4	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/Epoxy	each		277.00
6.5	Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical specification.			
A	Cement Grout	kg		167.00
B	Cement mortar (1:1) Grouting	kg		162.00
6.6	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.	sqm		861.00
6.7	Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.	kg		411.00
6.8	Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification	sqm		1795.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
6.9	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 2807.1., sand and coarse aggregates conforming to IS: 383 and table 1 of IS: 9012 respectively, water cement ratio ranging from 0.35 to 0.50, density of gunite not less than 2000 kg/cum, strength not less than 25 Mpa and workmanship conforming to clause 2807.6.	sqm		307.00
6.1	Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete	sqm		103.00
6.11	Epoxy bonding of new concrete to old concrete	sqm		1823.00
6.12	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestressing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne		424341.00
6.13	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestressing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne		410352.00
6.14	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestressing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne		379933.00
6.15	Replacement of bearings complete as per Technical specification	each		94012.00
6.16	Rectification of bearings as per Technical specifications	each		28664.00
6.17	Replacement of Expansion Joints complete as per drawings	metre		2952.00
6.18	Dismantling of damaged concrete railing.	metre		204.00
6.19	Dismantling of crash barrier.	metre		338.00
6.2	Dismantling of damaged mild steel railing	metre		178.00

Item No.	Descriptions	Unit	Labour Rate	Through Rate
6.21	Repair of crash barrier (Repair of concrete crash barrier with cement concrete of M-30 grade by cutting and trimming the damaged portion to a regular shape, cleaning the area to be repaired thoroughly, applying cement concrete after erection of proper form work.)	metre		242.00
6.22	Repair of RCC Railing (Carrying out repair of RCC M30 railing to bring it to the original shape.)	metre		160.00
6.23	Repair of steel Railing (Repair of steel railing to bring it to the original shape)	metre		1364.00
6.24	Extra for providing and mixing polyster triangular synthetic fibres in specified ratio 6-18 mm in length designed for melting point 240-260 degree centigrade and having specic gravity of 1.33-1.4 in all types of CC, RCC & plaster @ 0.125kg of fibre per bag(50kg) of cement or2.5 kg of fibre per tonne of cement used	per tonne of cement		1500.00