GOVERNMENT OF HIMACHAL PRADESH

PUBLIC WORKS DEPARTMENT

SCHEDULE OF RATES

2021

PMGSY

BRIDGE WORKS

FOREWORD

Roads arethe lifeline of any economy and a very vital infrastructure for the rapid economic growth of any State. In fact, the development of important sectors of economy such as Agriculture, Horticulture, Industry, Mining, Forestry and Tourism depends upon the availability of a good extensive road network. Activities of social development such as education, health, food security etc. also depend upon an efficient road network. So the primary objective and aim of the Public Works Department is to provide connectivity by way of providing good all weather roads to all the habitations in the State in addition to meeting adequate standards of comforts to the road users.

Himachal Pradesh is a hill state and given its difficult terrain, to provide road connectivity to its people is a challenging task. As per the guidelines of PMGSY, Himachal Pradesh Public Works Department has taken up this challenge boldly to provide connectivity to the villages by way of constructing good quality of rural roads connecting distant habitations to the mainstream.

Till now, Schedule of Rates 2016 was in operation in HPPWD for PMGSY road and bridge works. However, it was decided in the year 2019 to revise the PMGSY Schedule of Rates by Ministry of Rural Roads Development, Govt. of India. Accordingly, a technical committee of PWD officers was constituted and accordingly Standard Schedule of Rates for PMGSY works has been prepared. This document will also be extensively used by all the branches of HPPWD and other Govt. agencies in the State. The basic rates of labour, material and machinery, as applicable in Himachal Pradesh, have been taken into consideration for the analysis of different items in this Schedule of Rates.

I wish to place on record the efforts made by HPPWD officers and officials in bringing out this document in the present form.

Principal Secretary (PWD)
to the Govt. of Himachal Pradesh.
Shimla 171002

ACKNOWLEDGMENT

I take this as an opportunity to place on record the untiring efforts put in by designated committee of this department for coordinating all the activities associated with bringing out this updated Schedule of Rates 2021 for PMGSY Road & Bridge Works. Sincere and dedicated work of all members of the committee constituted for finalizing and recommending the data input, all staff involved in collection, compilation of market rates, preparation of input data and carrying out the job of comparison of printing material are sincerely acknowledged.

At last, I acknowledge my specific thanks to Sh. Sewak Ram Sharma Circle Head Draughtsman (Retd.) for his sincere and hard work to prepare the schedule of rates in a time bound manner.

I hope the user agencies shall find HP Schedule of Rates-2021 for PMGSY works a useful document in the pursuit of their professional activities.

(Er. Ajay Gupta)
Engineer-in-chief (Project)
HP.PWD. Shimla-2.

PREFACE

Schedule of rates for PMGSY road works was made applicable in Himachal Pradesh Public Works Department in the year 2016. Since then, there has been considerable increase in labour wages and cost of materials. This escalation in prices has been responsible in the ever widening gap between estimated cost and the actual cost of construction.

It was decided at Government level to revise the PMGSY Schedule of Rates in the year 2019 and a technical committee of following officers was constituted:-

1.	Engineer-in-Chief (Project) HP.PWD. Shimla-2.	Chairman.
2.	Chief Architect, HP.PWD. Shimla-2.	Member.
3.	Superintending Engineer (PMGSY)HP.PWD. Shimla-2.	Member.
4.	Superintending Engineer (D-III) HP.PWD. Shimla-2.	Member.
5.	Superintending Engineer (QC&D) HP.PWD. Shimla-2.	Member Secy.
6.	Executive Engineer (R & B) HP.PWD. Shimla-2.	Member.
7.	Executive Engineer (QC&D)HP.PWD. Shimla-2.	Member.
8.	Joint Controller (F&A HPPWD Shimla-2.	Member.
9.	Planning Officer (R & B) HP.PWD. Shimla-2.	Member.
10.	Assistant Engineer (QC&D) HP.PWD. Shimla-2.	Member.

Accordingly, SOR for PMGSY Road and Bridge works was prepared and submitted to the Director (Project-1) NRIDA New Delhi during 2/2020 for scrutiny /approval. Thereafter, observations as raised by NRIDA from time to time have been attended by the department. Now, the Joint Director (PROJECT-I) NRIDA vide letter No. P-17023/5/2005-P-I/2324/2344 dated 03-12-2021 has intimated that the justification worked out for schedule of rates has been summarily examined and found to be in order. It has further been advised to use bitumen DURAPAVE EMULSION CSS1 (H) OR CSS2 to reduce the rate of bitumen emulsion and to amend the proposal of SOR 2021 and finalize the same at State end. It has specifically been apprised that the State Government being the executing agency of PMGSY, is competent and responsible for fixation of rates. As such, the competent authority

may prepare SOR for 2021 based on Standard Data Book using the rates of Labour, Material and Machinery provided to NRIDA.

Accordingly, the document has been amended and approved by the designated committee of the department.

The new schedule of rates 2021 is compatible with Book of specification (BOS) for Rural Roads & Standard Data Book Published by Indian Road Congress.

Though every care has been taken to include all relevant items of the works of roads and bridges (PMGSY works), however, in case rates for some additional items of work are required; the same may be derived / analyzed on the basis of Standard Data Book for PMGSY works and same may be adopted after approval from the competent authority.

CO N T EN T S

Chapter	Description	P age
A	Basic Rates of Labour	1
B	Usage of Plant & Machinery	2 - 4
C	Basic Rates of Material	5 - 10.
1	Carriage of Materials	11 - 12.
2	Foundation	13 - 32
3	Substructure	33 - 37
4	Super structure	38 - 46
5	River Training and Protection works	47 - 49
6	Repair and Rehabilitation	50 - 53

ANNEXURE-A

CHAPTER - A

BASIC RATES OF LABOUR

Sr. No.	Description of Labour	Unit	Rate including 1/6th Paid Holiday (Rs.)
1	Bhisti	day	350.00
2	Bitumen Sprayer	day	350.00
3	Blacksmith	day	403.67
4	Blaster	day	403.67
5	Carpenter 1st Class	day	505.17
6	Chips spreader	day	350.00
7	Chiseller	day	421.17
8	Dresser (Skilled)	day	350.00
9	Driller	day	350.00
10	Electrician	day	403.67
11	Fitter	day	403.67
12	Mason (1st class)	day	505.17
13	Mason (2nd Class)	day	421.17
14	Mate	day	350.00
15	Mazdoor (Unskilled)	day	350.00
16	Mazdoor (Semi skilled)	day	350.00
17	Mazdoor (Skilled)	day	350.00
18	Painter (Ist class)	day	403.67
19	Plumber	day	365.17
20	Surveyor	day	505.17
21	White Washer	day	369.83
22	Driver	day	421.17

Rates approved by the Government of Himachal Pradesh vide notification No. Fin-(PR)B(7)-33/2010 dated 16-04-2021.

ANNEXURE-B

USAGE RATES OF PLANT & MACHINERY

Sr.No.	Description of machinery		Output of Machine		Unit	Av. Rate 2021
	Machine	Activity	Unit	Output		
1	Air Compressor 210 cfm	Supplying compressed air	cfm	210	per hour	488.00
2	Batch mix HMP 40-60 TPH	BM, DBM, SDBC, PM	t/h	50	per hour	15000.00
3	Batch type HMP 30/40 TPH	BM, DBM, SDBC, PM	t/h	35	per hour	14488.00
4	Bitumen boiler oil fired	Heating of bitumen				
	200 litre		litre / h	400	per hour	445.00
	1000 litre		litre / h	2000	per hour	1408.00
5	Bitumen emulsion pressure distributor	Applying bitumen tack coat	sqm/h	1750	per hour	1569.00
6	Concrete mixer 0.28/0.4 cum	Mixing of ingradients	cum/h	2.50	per hour	350.00
7	Crane upto 8T	Lifting of materials			per hour	680.00
8	Dozer D 50	Dozing cutting	cum/h	200.00	per hour	3142.00
			cum/h	100.00		1740.00
9	Electric generator set, 125 KVA	Electricity generation	KVA	100.00	per hour	1160.00
10	Emulsion Sprayer with Tractor	Spraying of Emulsion			per hour	1296.00
11	Front end-loader 1 cum bucket capacity @ 45 cum/hour	Loading Aggregates	cum/h	45.00	per hour	1281.00
		Loading Soil	cum/h	100.00		1321.00
12	Hydraulic broom with tractor	Surface cleaning	sqm/h	1250	per hour	528.00
13	Hydraulic Excavator 0.9 cum	Excavation	cum/h	100.00	per hour	1080.00
14	Hydraulic self propelled chip spreader	Surface Dressing	sqm/h	1500	per hour	1200.00
15	Jack Hammer with tractor	Pavement breaking & rock drilling	cum/h	05. to 1	per hour	700.00
16	Joint Cutting Machine with 2-3 blades	Cutting of Joints	h		per hour	1227.00
17	Mixall 6-10 t capacity	Mixing of bituminous materials	t/h	8.00	per hour	1776.00
18	Motor Grader	Scarifier & levelling	cum/h	200.00	per hour	3513.00
				50.00		2318.00
19	Needle vibrator	Vibrating cement concrete mix	cum/h	3.50	per hour	100.00
20	Paver finisher	Laying/spreading	t/h	75.00	per hour	4300.00
21	Plate compactor	Compaction	cum/h		per hour	100.00
22	Plate vibrator	Compaction	cum/h		per hour	100.00

Sr.No.	Description of machinery		Output of Machine		Unit	Av. Rate 2021
	Machine	Activity	Unit	Output		
23	Screed vibrator	Compaction	cum/h		per hour	100.00
24	Smooth wheeled 80-100 kN tandem roller	Compaction of Sub-base/ Asphalt	cum/h	30.00	per hour	1432.00
25	Stone crusher (Integrated) of 200 TPH	Crushing of Spalls	t/h	200.00	per hour	4780.00
26	Three wheel 80-100 kN Static Roller	Compaction/ Rolling			per hour	1100.00
		Earth:- Embankment or sub-grade	cum/h	80/70		1100.00
		Sub-base G-I	cum/h	10.00		1100.00
		Sub-base G-II/G-III	cum/h	8.00		1100.00
		WMM	cum/h	16.00		1100.00
		BUSG	cum/h	10.00		1100.00
		BM 50/75 mm	cum/h	12.00		1100.00
		Premix 20 mm	sqm/h	250.00		1100.00
		Seal Coat	sqm/h	500.00		1100.00
		Surface Dressing 1st Coat	sqm/h	400.00		1100.00
		Surface Dressing 2ndCoat	sqm/h	500.00		1100.00
27	Tipper 5.5 cum/10 t	Carriage	cum/trip	5.50	per hour	570.00
28	Tractor with Disc Harrows	Pulverisation of soil	cum/h	80.00	per hour	431.00
29	Tractor with ripper @ 60 cum per hour	Ripping Pavements, uprooting trees	cum/h	60.00	per hour	687.00
30	Tractor with trolley	Transportation of materials	t/trip	3 to 5	per hour	581.00
31	Tractor with Rotavator	Scarifier	cum/h	25.00	per hour	688.00
32	Tractor Mount Grader	Spreading	cum/h	26.00	per hour	700.00
33	Truck 10 t capacity	Carriage	cum/trip	5.50	per hour	589.00
34	Vibratory roller 80-100 kN	Compaction of soil WMM	cum/h	100.00	per hour	1800.00
		Compaction of BM	cum/h	60.00		1800.00
35	Water tanker 6 kl capacity (Truck Mounted)	Carriage of water	litre / h	12000	per hour	500.00
36	Wet mix plant (Pug Mill)	Wet Mix	cum/h	25	per hour	1500.00
37	Grout pump with agitator and accessories		hour	0	0	682.00
38	Concrete Pump		hour	0	0	240.00
39	Epoxy Injection gun		hour	0	0	809.00
40	Stressing jack with pump		hour	0	0	328.00
41	Grouting pump with agitator		hour	0	0	680.00

Sr.No.	Description of machinery		Output of Machine		Unit	Av. Rate 2021
	Machine	Activity	Unit	Output		
42	i) Hire charges for jack of 40 tonne lifting capacity.		Day	0	0	546.00
43	Mastic cooker 1 tonne capacity		hour	0	0	109.00
44	Trailer 35 tonne capacity for transporting to site.		tonne.km	0	0	2202.00
45	Trailor 30 tonne capacity during placement.		hour	0	0	2224.00
46	Transit Mixer 4.0/4.5 cum		hour	0	0	1601.00
47	Transit Mixer 30 cum		hour	0	0	1464.00
48	Integrated Stone Crusher 100THP	100 TPH	hour	0	0	15044.00
49	Integrated Stone Crusher 200 HP	200 TPH	hour	0	0	20872.00
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	8327.00
51	Batch mix HMP @ 75 tonne per hour				Per hour	16800.00
52	Generator 250 KVA				Per hour	1850.00
53	Air compressor 250 cfm				Per hour	500.00
54	Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.				Per hour	1888.00
55	Pneumatic tyred roller 12-15 tonnes				Per hour	960.00
56	Road marking machine @ 60 sqm per hour				Per hour	105.00

57	Generator 33 KVA	Electricity generation	KVA	35	per hour	630.00
58	Generator 63 KVA	Electricity generation	KVA	63	per hour	707.00
59	Crane 10 t capacity	Lifting of materials	T	10	per hour	1096.00
60	Crane20 t capacity	Lifting of materials	T	20	per hour	1100.00
61	Crane upto 35t	Lifting of materials	T	35	per hour	1250.00
62	Crane upto 40 t capacity	Lifting of materials	T	40	per hour	1350.00
63	Crane upto 50 t capacity	Lifting of materials	T	50	per hour	1800.00
64	Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	Lifting of materials			per hour	1096.00
65	Pneumatic Sinking Plant				per hour	6290.00
66	Motorised barge of 20 tonne capacity				per hour	545.00
67	Boat to carry atleast 20 persons				per hour	545.00
68	Vibrating Pile driving hammer complete with power unit and accessories.				per hour	2500.00

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	1298.00
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	1298.00
4	Aggregate - Grading II (19 mm nominal Size) 25 mm – 10 mm	cum	1298.00
5	Aggregate - Grading II (19 mm nominal Size) 5 mm and below	cum	1298.00
6	Aggregate 10 mm	cum	1298.00
7	Aggregate 20 mm	cum	1298.00
8	Aggregate 40 mm	cum	954.00
9	Aggregate- Crushable type such as moorum or Gravel for Grading I	cum	952.00
10	Aggregate- Crushable type such as moorum or Gravel for Grading II	cum	952.00
11	Aggregate- Crushable type such as moorum or Gravel for Grading III	cum	952.00
12	Aggregate-Grading I 90 mm to 45 mm	cum	900.00
13	Aggregate-Grading II 63 mm to 45 mm	cum	1000.00
14	Aggregate-Grading III 53 mm to 22.4 mm	cum	1000.00
15	Aggregates 22.4 mm to 2.36 mm for wet mix macadam	cum	1000.00
16	Aggregates 45 mm to 22.4 mm for wet mix macadam	cum	1000.00
17	Aluminium sheeting (1.5 mm thick)	sqm	400.00
18	Angle Iron 50 mm x 50 mm x 6 mm	Kg	70.00
19	Binding Material for road	cum	500.00
20	Binding wire	kg	80.00
21	Bitumen (Crumb Rubber Modified)	tonne	52305.00
22	Bitumen (VG-10)	t	40159.00
23	Bitumen Emulsion (RS-1)	t	46453.00
24	Bitumen Emulsion (Durapave EmulsionCSS-1(H))	t	48356.00
25	Bitumen emulsion (MS)	t	46239.00
26	Bond stone (400 mm x 150 mm x 150 mm)	No.	25.00
27	Brick 1st Class	No.	7.00
28	Cement	t	6875.00
29	Crushed Sand or Grit Passing 2.36 mm and retained on 180 micron	cum	1093.00

Sr. No.	Description	Unit	Av. Rate
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	600.00
38	Fine aggregate/Crushed sand 2.36 mm to 75 micron	cum	900.00
39	Fuel wood	Qtl	550.00
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	600.00
46	RCC Pipe NP2 (1200 mm dia) i/c collars	m	4596.00
47	RCC Pipe NP2 (1000 mm dia) i/c collars	m	3242.00
48	RCC Pipe NP2 (900 mm dia) i/c collars	m	2625.00
49	RCC Pipe NP3 (900 mm dia) i/c collars	m	5141.00
50	Road marking paint	litre	300.00
51	Sand (Coarse)	cum	1156.00
52	Sand (Fine)	cum	1167.00
53	Steel Reinforcement (HYSD Bars)	t	59875.00
54	Steel Reinforcement (MS Round Bars)	t	58000.00
55	Steel Reinforcement (TMT Bars)	t	59875.00
56	Stone Boulder of size 150 mm and below (minimum 25 kg net)	cum	700.00
57	Stone Chips 12 mm size	cum	1268.00
58	Stone Chips 13.2 mm to 5.6 mm	cum	1277.00
59	Stone Crushed Aggregate 11.2 mm to 0.09 mm	cum	1345.00
60	Stone for Coarse Rubble Masonry 1st Sort	cum	800.00
61	Stone for Coarse Rubble Masonry 2nd Sort	cum	800.00

Sr. No.	Description	Unit	Av. Rate
62	Stone for Random Rubble Masonry	cum	700.00
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	1274.00
65	Stone Screening - Type A 13.2 mm for Grading-2	cum	1274.00
66	Steel (ISMC) 100 mm	t	55110.00
67	Stone Screening - Type B 11.2 mm for Grading-2	cum	1274.00
68	Stone Screening - Type B 11.2 mm for Grading-3	cum	1274.00
69	Water	kl	102.00
70	Well graded Granular Base Material - Grading A 2.36 mm below	cum	1004.00
71	Well graded Granular Base Material - Grading A 26.5 mm to 4.75 mm	cum	959.00
72	Well graded Granular Base Material - Grading A 53 mm to 26.5 mm	cum	916.00
73	Well graded Granular Base Material - Grading B 2.36 mm below	cum	932.00
74	Well graded Granular Base Material - Grading B 26.5 mm to 4.75 mm	cum	924.00
75	Well graded Granular Base Material - Grading C 2.36 mm below	cum	906.00
76	Well graded Granular Base Material - Grading C 2.36 mm below	cum	927.00
77	Well Graded Material for Sub-Base - Grading I 2.36 mm below	cum	899.00
78	Well Graded Granular sub-base material of Grading-I as per table 400.1 of Specification.	cum	985.00
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
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

Sr. No.	Description	Unit	Av. Rate
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 strengthed by 25mmX5mm MS flat iron on logo and middle plate angle iron 25mm X 25 mm X 5 mm on bottom plate painting with steve enameled paint on both sides as per MORD specification.	Per Sqm	1451.00
94	PVC pipe 100 mm dia.	Per rmt.	200.00
95	G.I.Wire		82.00
96	Granular material (Natural occuring, 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.	Kg	151.00
102	G I pipe 100 mm dia	Mtr.	837.00
103	MS tubes	Kg	91.00
104	Angle iron	kg	70.00
105	Wire mesh 50mm x 50mm size of 3mm wire	kg	155.00
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, intiator and promoter.	kg	17.00
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

Sr. No.	Description	Unit	Av. Rate
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	60000.00
123	MS Bolt and nuts	kg	85.00
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	190.00
126	Permeable synthetic geotextile.	sqm	180.00
127	4mm GI wire crates woven in mesh size of 100 mm x 100 mm.	sqm	190.00
128	Admixture @ 0.4 per cent of cement	kg	160.00
129	H.T. Strand for jacking	tonne	138583.00
130	Sheathing duct.	metre	245.00
131	i) Bitumen 80/100 or 60/70 or 30/40	tonne	40159.00
132	ii) Crusher stone dust	cum	1156.00
133	Lime stone dust filler with calcium carbonate content.	tonne	7725.00
134	Pre-coated stone chips of 9.5 mm nominal size.	cum	1100.00
135	Corrosion resistant Structural steel including 5 per cent wastage	Kg	115.00
136	GI pipe 100mm dia	metre	800.00
137	GI bolt 10 mm Dia	each	10.00
138	Galvanised MS flat clamp	each	180.00
139	LDO for steam curing	Litre	60.00
140	Helical pipes 600mm diameter	metre	7000.00
141	Tie rods 20mm diameter	each	120.00
142	Galvanised M.S plate 200 mm wide,12 mm thick @ 94.20 kg/sqm including 5 per cent wastage	kg	80.00
143	Copper plate -	kg	900.00
144	20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	500.00
145	Premoulded joint filler 12 m long,20 mm thick and 300 mm deep.	sqm	1900.00
147	Polymer modified bitumen	kg	61.26
148	Galvanised structural steel plate .	kg	110.00
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	8500.00
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	105.00
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	19300.00

Sr. No.	Description	Unit	Av. Rate
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	22000.00
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	25000.00
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	30000.00
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.	75000.00
156	Forged steel roller bearing of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	110000.00
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.	180000.00
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.	90000.00
159	Supply of sliding plate bearing of 80 tonne design capacity complete as per drawings and Technical Specifications.	each.	55000.00
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.	180000.00
161	Bitumen VG-10	t	40159.00
162	Bitumen VG-30	t	40960.00
163	Bitumen (Durapave Emulsion CSS-2)	t	48688.00

164	Wooden ballies 8" Dia and 9 m long	Each	550.00
165	Wooden ballies 2" Dia for bracing	Metre	135.00
166	Bentonite	Kg	55.00
167	Steel helmet and cushion block on top of pile head during driving.	Kg	114.00
168	M.S. Clamps	Kg	85.00
169	M.S.shoes @ 35 Kg per pile of 15 m	Kg	135.00
170	C.I.shoes for the pile	Kg	85.00
171	AC pipe 100 mm dia	Metre	150.00
172	HTS strand	Tonne	85060.00
173	Water based cement paint	Litres	410.00

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 sort 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 HMP 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 un-loaded 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	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	145.00
1.2	Loading and Unloading of Boulders by Manual Means	cum	169.00
1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking.	tonne	243.00
1.4	Cost of Haulage Excluding Loading and Unloading		
(i)	Surfaced Road	tonne /km	5.00
(ii)	Unsurfaced Gravelled Road	tonne.km	6.00
(iii)	Katcha Track and Track in river bed / nallah bed and choe bed.	tonne.km	12.10
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	1678.00
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	1474.00
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	1251.00
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	1241.00

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 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 s has been given very briefly. Relevant clauses of MoRT&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 stems 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 of after 3 days.

CHAPTER-2

FOUNDATIONS

Item No.	Descriptions	Unit	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	174.00
(ii)	3 m to 6 m depth	cum	224.00
(iii)	Above 6 m depth	cum	299.00
B	Mechanical Means		
(i)	Depth upto 3 m	cum	54.00
(ii)	Depth 3 m to 6 m	cum	61.00
(iii)	Depth above 6m	cum	77.00
II	Ordinary rock (not requiring blasting)		
A	Manual Means		
(i)	Depth upto 3 m	cum	249.00
B	Mechanical Means	cum	66.00
III	Hard rock (requiring blasting)		
A	Manual Means	cum	582.00
IV	Hard rock (blasting prohibited)		
A	Mechanical Means	cum	650.00
V	Marshy soil		
(i)	upto 3 m depth		
A	Manual means	cum	711.00
B	Mechanical Means	cum	160.00
VI	Back Filling in Marshy Foundation Pits	cum	514.00
2.2	Filling Annular Space Around Footing in Rock (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per items 2.4.)	cum	5393.00
2.3	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	2065.00

Item No.	Descriptions	Unit	Through Rate
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	5393.00
2.5	Brick masonry work in cement mortar 1:3 in foundation complete excluding pointing and plastering, as per drawing and technical specifications	cum	7815.00
2.6 A	Sub analysis for cement mortar	cum	5049.00
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	5732.00
(b)	Random Rubble Masonry	cum	5187.00
2.8	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications		
A	PCC Grade M15	cum	6200.00
B	PCC Grade M20	cum	6917.00
C	RCC Grade M20		
Case I	Using concrete mixer	cum	7125.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	13142.00
D	PCC Grade M25		
Case I	Using concrete Mixer	cum	7440.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	13446.00
E	RCC Grade M25		
Case I	Using concrete Mixer	cum	7662.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	13657.00
F	PCC Grade M30		
Case I	Using Concrete Mixer	cum	7481.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13466.00
G	RCC Grade M30		
Case I	Using Concrete Mixer	cum	7669.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13658.00
H	RCC Grade M35		
Case I	Using Concrete Mixer	cum	7781.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13741.00
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	72326.00

Item No.	Descriptions	Unit	Through Rate
B	Assuming depth of water 4.0 m and height of island 4.5 m.	each	415745.00
C	Providing and constructing one span service road to reach island location from one pier location to another pier location	metre	3820.00
2.1	Providing and laying cutting edge of mild steel weighing 40 kg per metre for well foundation complete as per drawing and technical specification.	tonne	106331.00
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	8222.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15164.00
(ii)	RCC M25 Grade		
Case I	Using concrete mixer	cum	8855.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	16220.00
(iii)	RCC M35 Grade		
Case I	Using concrete mixer	cum	9065.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	16290.00
B	Well steining		
(I)	PCC M15 Grade		
Case I	Using concrete mixer	cum	6559.00
(ii)	PCC M20 Grade		
Case I	Using concrete mixer	cum	7316.00
(iii)	RCC M20 Grade		
Case I	Using concrete mixer	cum	7537.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	13900.00
(iv)	PCC M25 Grade		
Case I	Using concrete mixer	cum	7889.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14257.00
(v)	RCC M25 Grade		
Case I	Using concrete mixer	cum	8117.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14721.00
(vi)	PCC M30 Grade		

Item No.	Descriptions	Unit	Through Rate
Case I	Using concrete mixer	cum	7951.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14312.00
(vii)	RCC M30 Grade		
Case I	Using concrete mixer	cum	8151.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14516.00
(viii)	RCC M35 Grade		
Case I	Using concrete mixer	cum	8310.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15082.00
(ix)	RCC M40 Grade		
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15171.00
C	Bottom Plug		
(i)	PCC Grade M20		
Case I	Using Concrete Mixer	cum	7872.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	13432.00
(ii)	PCC Grade M25		
Case I	Using Concrete Mixer	cum	8208.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	13765.00
(iii)	PCC Grade M30		
Case I	Using Concrete Mixer	cum	8267.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	13828.00
(iv)	PCC Grade M35		
Case I	Using Concrete Mixer	cum	8405.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	13963.00
D	Intermediate plug		
(I)	Grade M20 PCC		
Case I	Using Concrete Mixer	cum	7466.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	13124.00
(ii)	Grade M25 PCC		
Case I	Using Concrete Mixer	cum	7861.00

Item No.	Descriptions	Unit	Through Rate
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	13440.00
(iii)	Grade M30 PCC		
Case I	Using Concrete Mixer	cum	7917.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	13500.00
E	Top plug		
(i)	Grade M15 PCC		
Case I	Using Concrete Mixer	cum	5962.00
(ii)	Grade M20 PCC		
Case I	Using Concrete Mixer	cum	6651.00
(iii)	Grade M25 PCC		
Case I	Using Concrete Mixer	cum	7172.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	12961.00
(iv)	Grade M30 PCC		
Case I	Using Concrete Mixer	cum	7228.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	13011.00
F	Well cap		
(i)	RCC Grade M20		
Case I	Using concrete Mixer	cum	7067.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13081.00
(ii)	RCC Grade M25		
Case I	Using concrete Mixer	cum	7655.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13658.00
(iii)	RCC Grade M30		
Case I	Using Concrete Mixer	cum	7669.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13657.00
(iv)	RCC Grade M35		
Case I	Using Concrete Mixer	cum	7781.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13741.00
(v)	RCC M40 Grade		
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	14254.00

Item No.	Descriptions	Unit	Through Rate
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	4795.00
(ii)	Beyond 3m upto 10m depth	metre	6819.00
(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	9006.00
(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	16894.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	20273.00
(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	40138.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	48166.00
B	Clayey soil (6m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	6819.00
(ii)	Beyond 3m upto 10m depth	metre	15107.00
(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	19951.00
b	Add for dewatering @ 5% of cost, if required.	metre	20948.00
(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	67016.00
b	Add 5% of cost for dewatering of the cost, if required	metre	87958.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	83770.00
(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	159219.00
b	Add 5% of cost for dewatering, if required	metre	200616.00

Item No.	Descriptions	Unit	Through Rate
	c Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	191062.00
C	Soft rock (6m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	21966.00
D	Hard rock (6m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	22802.00
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		
(i)	Depth below bed level upto 3.0 M	metre	6403.24
(ii)	Beyond 3m upto 10m depth	metre	9668.00
(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	12769.00
(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	23951.00
	b Add 20% of cost for Kentledge including supports, loading arrangement and Labour) .	metre	28742.00
(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	56908.00
	b Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	68290.00
B	Clayey soil (7m dia. Well)		
(I)	Depth below bed level upto 3.0 M	metre	9668.00
(ii)	Beyond 3m upto 10m depth	metre	13890.00
(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	16379.00
	b Add for dewatering @ 5% of cost, if required.	metre	17198.00
(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	30723.00
	b Add 5% of cost for dewatering on the cost, if required	metre	40324.00

Item No.	Descriptions	Unit	Through Rate
	c Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	38404.00
(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	72994.00
	b Add 5% of cost for dewatering, if required	metre	91972.00
	c Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		87593.00
C	Soft rock (7m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	18432.00
D	Hard rock (7m dia well)		
(i)	Depth upto 3 m	metre	26923.00
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	8843.00
(ii)	Beyond 3m upto 10m depth	metre	10886.00
(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	12836.00
(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	24077.00
	b Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	28892.00
(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	57201.90
	b Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	68642.00
B	Clayey soil (8m dia. Well)		
(i)	Depth upto 3.0 M	metre	11816.00
(ii)	Beyond 3m upto 10m depth	metre	15979.00
(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	18844.00

Item No.	Descriptions	Unit	Through Rate
	b Add for dewatering @ 5% of cost, if required.	metre	19786.00
(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	35346.00
	b Add 5% of cost for dewatering on the cost, if required	metre	46392.00
	c Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	44182.00
(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	83976.00
	b Add 5% of cost for dewatering, if required	metre	105810.00
	c Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	100772.00
C	Soft rock (8m dia well)		
(i)	Depth in soft rock strata upto 3m	metre	20552.00
D	Hard rock (8m dia well)		
(i)	Depth in hard rock strata upto 3 m	metre	27711.00
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	8967.00
(ii)	Beyond 3m upto 10m depth	metre	11960.00
(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	14103.00
(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	26454.00
	b Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	31744.00
(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	62850.00
	b Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	75420.00
B	Clayey soil (9m dia. Well)		

Item No.	Descriptions	Unit	Through Rate
(i)	Depth below bed level upto 3.0 M	metre	12478.00
(ii)	Beyond 3m upto 10m depth	metre	17237.00
(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	22765.00
	b Add for dewatering @ 5% of cost, if required.	metre	23903.00
(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	42702.00
	b Add 5% of cost for dewatering on the cost, if required	metre	56046.00
	c Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	53377.00
(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	101453.00
	b Add 5% of cost for dewatering, if required	metre	127831.00
	c Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	121744.00
C	Soft rock (9m dia well)		
(i)	Depth upto 3m	metre	25678.00
D	Hard rock (9m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	31889.00
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	10742.00
(ii)	Beyond 3m upto 10m depth	metre	12631.00
(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	14895.00
(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	27940.00
	b Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	33528.00
(v)	Beyond 30m upto 40 m		

Item No.	Descriptions	Unit	Through Rate
	a Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	66381.00
	b Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	79657.00
B	Clayey soil (10m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	13853.00
(ii)	Beyond 3m upto 10m depth	metre	17104.00
(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	20169.00
	b Add for dewatering @ 5% of cost, if required.	metre	21178.00
(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	37833.00
	'b Add 5% of cost for dewatering on the cost, if required	metre	49656.00
	c Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	47291.00
(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	89885.00
	b Add 5% of cost for dewatering, if required	metre	113256.00
	c Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		107863.00
C	Soft rock (10m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	26208.00
D	Hard rock (10m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	36112.00
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	24602.00
	(ii) Beyond 3m upto 10m depth	metre	19736.00
	(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	23271.00

Item No.	Descriptions	Unit	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	43652.00
	b Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	52383.00
(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	103710.00
	b Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	124452.00
B	Clayey soil (11 m dia. Well)		
(i)	Depth from bed level upto 3.0 M	metre	22979.00
(ii)	Beyond 3m upto 10m depth	metre	35322.00
(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	41651.00
	b Add for dewatering @ 5% of cost, if required.	metre	43734.00
(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	78128.00
	b Add 5% of cost for dewatering on the cost, if required	metre	102544.00
	c Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	97661.00
(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	185622.00
	b Add 5% of cost for dewatering, if required	metre	233884.00
	c Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	222747.00
C	Soft rock (11m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	58624.00
D	Hard rock (11m dia well)		
(i)	Depth of hard rock upto 3 m	metre	80655.00

Item No.	Descriptions	Unit	Through Rate
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	51044.00
(ii)	Beyond 3m upto 10m depth	metre	57506.00
(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	75947.00
(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	142456.00
	b Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	170947.00
(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	338456.00
	b Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	406147.00
B	Clayey soil (12 m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	56201.00
(ii)	Beyond 3m upto 10m depth	metre	87812.00
(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	103546.00
	b Add for dewatering @ 5% of cost, if required.	metre	108723.00
(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	194223.00
	b Add 5% of cost for dewatering on the cost, if required	metre	254918.00
	c Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	242779.00
(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	461447.00
	b Add 5% of cost for dewatering, if required	metre	581424.00
	c Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	553737.00

Item No.	Descriptions	Unit	Through Rate
C	Soft rock (12m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	136980.00
D	Hard rock (12m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	180817.00
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	11567.00
(ii)	Beyond 3m upto 10m depth	metre	12482.00
(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	14717.00
(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	27603.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	33124.00
(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	65581.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	78697.00
B	Clayey soil (Twin D Type Well)		
(i)	Depth below bed level upto 3.0 M	metre	13552.00
(ii)	Beyond 3m upto 10m depth	metre	18960.00
(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	22357.00
b	Add for dewatering @ 5% of cost, if required.	metre	23475.00
(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	41936.00
b	Add 5% of cost for dewatering on the cost, if required	metre	55041.00

Item No.	Descriptions	Unit	Through Rate
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	52420.00
(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	99634.00
b	Add 5% of cost for dewatering, if required	metre	125539.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	119561.00
C	Soft rock (Twin D Type well)		
(i)	Depth of soft rock strata upto 3m	metre	29681.00
D	Hard rock (Twin D Type well)		
(i)	Depth of hard rock strata upto 3 m	metre	38476.00
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 clause1207.6 of MoRTH Specifications.	cum	138633.60
2.21	Sand filling in wells complete as per drawing and technical specifications	cum	2065.00
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	98203.00
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	12426.00
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	20783.00

Item No.	Descriptions	Unit	Through Rate
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	27041.00
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	8787.00
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	14489.00
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	21067.00
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	4129.00
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	7584.00
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	12865.00
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	2649.00
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	4846.00
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	9541.00
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	6987.00
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	7890.00
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		

Item No.	Descriptions	Unit	Through Rate
(i)	Using Concrete Mixer	cum	7089.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13144.00
B	RCC Grade M25		
(i)	Using concrete mixer.	cum	7657.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13712.00
C	RCC Grade M30		
(i)	Using concrete mixer.	cum	7729.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	13784.00
D	RCC Grade M35		
(i)	Using concrete mixer.	cum	7879.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump.	cum	13934.00
2.39	Levelling course for Pile cap.	cum	5908.00
2.40	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specifications.	tonne	91158.00
2.41	Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification.	tonne	88890.00

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 very 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&HS pecification.
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 pads, 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	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	15570.00
3.2	Pointing with cement mortar (1:3) on brick work in substructure as per Technical specifications	sqm	81.00
3.3	Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical specifications	sqm	160.00
3.4	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications		
A	Random Rubble Masonry	cum	5177.00
B	Coursed rubble masonry (first sort)	cum	5385.00
C	Ashlar masonry (first sort)	cum	8002.00
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	6559.00
B	PCC Grade M20		
(p)	Height upto 5m	cum	7316.00
C	PCC Grade M25		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	7811.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14257.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8176.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14775.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8535.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15423.00
D	PCC Grade M30		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	7951.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14312.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8240.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14833.00
(r)	Height above 10m		

Item No.	Descriptions	Unit	Through Rate
Case I	Using concrete Mixer	cum	8602.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15484.00
E	RCC Grade M20		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	7537.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	13900.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	7811.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14405.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8154.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15037.00
F	RCC Grade M25		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	8117.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14868.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8382.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15355.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8781.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	16085.00
G	RCC Grade M30		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	8151.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14516.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8381.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	14925.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8707.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15505.00
H	RCC Grade M35		

Item No.	Descriptions	Unit	Through Rate
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	8310.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15082.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8491.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15411.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8763.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	15905.00
3.6	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	tonne	91368.00
3.7	Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and technical specification	tonne	78411.00
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 foce. Complete as per drawing and Technical specifications	each	496.00
3.9	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification		
A	Granular material	cum	1004.00
B	Sandy material	cum	2304.00
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	1388.00
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	418.00

Item No.	Descriptions	Unit	Through Rate
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	611.00
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	3120.00
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 centimetre	7.00
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	957.00
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, completre 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 asper drawing and approved technical specifications.	tonne capacity	999.00

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 MS. 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. RW/NH-34041/44/91-S&R dated 21-03-2000 of Ministry of Road Transport and Highway may be referred for further details.
5. Expansion joints involving movements exceeding 40 mm are specialized readymade items, commercially produced by reputed firms with imported technology and parts. The rates for such joints are required to be ascertained from the firms per-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. MoRT&H letter No. RW/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 desk/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	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	8154.00
(q)	Height 5m to 10m	cum	8494.00
(r)	Height above 10m	cum	8833.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	8494.00
(q)	Height 5m to 10m	cum	8833.00
(r)	Height above 10m	cum	9173.00
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	15094.00
(q)	Height 5m to 10m	cum	15723.00
(r)	Height above 10m	cum	16352.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	15723.00
(q)	Height 5m to 10m	cum	16352.00
(r)	Height above 10m	cum	16981.00
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	8809.00
(q)	Height 5m to 10m	cum	9176.00
(r)	Height above 10m	cum	9543.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	9176.00
(q)	Height 5m to 10m	cum	9543.00
(r)	Height above 10m	cum	9910.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump		

Item No.	Descriptions	Unit	Through Rate
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	15759.00
(q)	Height 5m to 10m	cum	16415.00
(r)	Height above 10m	cum	17072.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	16415.00
(q)	Height 5m to 10m	cum	17072.00
(r)	Height above 10m	cum	17729.00
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	8932.00
(q)	Height 5m to 10m	cum	9304.00
(r)	Height above 10m	cum	9676.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	9304.00
(q)	Height 5m to 10m	cum	9676.00
(r)	Height above 10m	cum	10048.00
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	15849.00
(q)	Height 5m to 10m	cum	16510.00
(r)	Height above 10m	cum	17170.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	16510.00
(q)	Height 5m to 10m	cum	17170.00
(r)	Height above 10m	cum	17831.00
D	RCC/PSC Grade M35		
Case 1	Using concrete mixer.		
(i)	For solid slab super-structure, 18-28% of (a+b+c)		
(p)	Height upto 5m	cum	8953.00
(q)	Height 5m to 10m	cum	9332.00
(r)	Height above 10m	cum	9712.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	9332.00
(q)	Height 5m to 10m	cum	9712.00

Item No.	Descriptions	Unit	Through Rate
(r)	Height above 10m	cum	10091.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of		
(p)	Height upto 5m	cum	10470.00
(q)	Height 5m to 10m	cum	11229.00
(r)	Height above 10m	cum	11988.00
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	15747.00
(q)	Height 5m to 10m	cum	16414.00
(r)	Height above 10m	cum	17081.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	16414.00
(q)	Height 5m to 10m	cum	17081.00
(r)	Height above 10m	cum	17748.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of		
(p)	Height upto 5m	cum	18416.00
(q)	Height 5m to 10m	cum	19750.00
(r)	Height above 10m	cum	21084.00
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	9715.00
(q)	Height 5m to 10m	cum	10120.00
(r)	Height above 10m	cum	10525.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	10120.00
(q)	Height 5m to 10m	cum	10525.00
(r)	Height above 10m	cum	10930.00
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	16288.00
(q)	Height 5m to 10m	cum	16978.00
(r)	Height above 10m	cum	17669.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	16978.00
(q)	Height 5m to 10m	cum	17669.00

Item No.	Descriptions	Unit	Through Rate
(r)	Height above 10m	cum	18359.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	19049.00
(q)	Height 5m to 10m	cum	20429.00
(r)	Height above 10m	cum	21810.00
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	16430.00
(q)	Height 5m to 10m	cum	17138.00
(r)	Height above 10m	cum	17846.00
(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	17138.00
(q)	Height 5m to 10m	cum	17846.00
(r)	Height above 10m	cum	18554.00
(iii)	For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56% of cost of concrete.		
(p)	Height upto 5m	cum	19263.00
(q)	Height 5m to 10m	cum	20679.00
(r)	Height above 10m	cum	22095.00
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	19468.00
(q)	Height 5m to 10m	cum	20910.00
(r)	Height above 10m	cum	22352.00
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	20012.00
(q)	Height 5m to 10m	cum	21494.00
(r)	Height above 10m	cum	22977.00
4.2	Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications.		
		tonne	93045.00

Item No.	Descriptions	Unit	Through Rate
4.3	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications.	tonne	229056.00
4.4	Providing and laying Cement concrete wearing coat, M-30 grade including reinforcement complete as per drawing and Technical Specifications.	cum	20259.00
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	499.00
4.6	Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolurence 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	3002.00
4.7	Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolurence 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	2938.00
4.8	Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specifications	metre	3690.00
4.9	Drainage Spouts complete as per drawing and Technical specifications	each	2913.00
4.10	PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specifications	cum	18112.00
4.11	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification	cum	18112.00
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

Item No.	Descriptions	Unit	Through Rate
4.13	Precast - pretensioned Girders (Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawing and technical specifications)	cum	37566
4.14	Providing and fixing Helical pipes in voided concrete slabs	metre	10361.00
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	307.00
4.17	Burried Joint (Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised wieldable 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	3034.00
4.18	Filler joint		
(i)	Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.	metre	5686.00
(ii)	Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.	metre	179.00
(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	793.00
(iv)	Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight	metre	31.00

Item No.	Descriptions	Unit	Through Rate
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 wieldable 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	2237.00
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	12278.00
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	32596.00
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	31673.00
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	34277.00

Item No.	Descriptions	Unit	Through Rate
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	41135.00

Chapter-5:

River Training and Protection works

Preamble:

1. Three types of aprons 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 on M-15.
2. A toe wall for toe protection of pitching can be either in dry rubble masonry (uncoursed) or in nominal mix cement concrete M-15. Depending upon the design, the rates may be adopted under respective clauses.
3. Floring has been proposed in dry rubble stone rubble stone laid in CM 1:3 and with cement concrete blocks M-15.
4. Curtain walls proposed are of following two types
   a) Course rubble stone masonry (1st sort) in CM 1:3
   b) Cement concrete M-15 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 crosion 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	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	1770.00
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	2565.00
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	5591.00
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	1770.00
B	Cement Concrete blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15	cum	5591.00
5.5	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum	1608.00
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	291.00

Item No.	Descriptions	Unit	Through Rate
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
5.8	Providing and laying Flooring complete as per drawing and Technical specifications laid over cement concrete bedding.		
A	Rubble stone laid in cement mortar 1:3	cum	6194.00
B	Cement Concrete blocks Grade M15	cum	7363.00
5.9	Dry rubble Flooring	cum	2273.00
5.10	Curtain wall complete as per drawing and Technical specification		
A	Stone masonry in cement mortar (1:3)	cum	5600.00
B	Cement concrete Grade M15	cum	5481.00
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	1844.00
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	2686.00
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	4258.00

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	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	156.00
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	119.00
6.3	Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical specification	sqm	976.00
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	355.00
6.5	Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical specification.		
	A Cement Grout	kg	240.00
	B Cement mortar (1:1) Grouting	kg	234.00
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	994.00
6.7	Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.	kg	270.00
6.8	Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification	sqm	2031.00

Item No.	Descriptions	Unit	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	377.00
6.10	Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete	sqm	136.00
6.11	Eproxy bonding of new concrete to old concrete	sqm	2062.00
6.12	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne	495898.00
6.13	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne	481159.00
6.14	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne	445406.00
6.15	Replacement of bearings complete as per Technical specification	each	110167
6.16	Rectification of bearings as per Technical specifications	each	41730.00
6.17	Replacement of Expansion Joints complete as per drawings	metre	5043.00
6.18	Replacement of damaged concrete railing.	metre	329.00
6.19	Replacement of crash barrier.	metre	578.0
6.20	Replacement of damaged mild steel railing	metre	279.0
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	443.00

Item No.	Descriptions	Unit	Through Rate
6.22	Repair of RCC Railing (Carrying out repair of RCC M30 railing to bring it to the original shape.)	metre	241.00
6.23	Repair of steel Railing (Repair of steel railing to bring it to the original shape)	metre	341.00
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	1680.00