

PUBLIC WORKS DEPARTMENT ARUNACHAL PRADESH



2012

SCHEDULE OF RATES

**FOR
ROAD AND BRIDGE WORKS**

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

**PUBLISHED UNDER THE AUTHORITY OF
THE CHIEF ENGINEER (DESIGN & PLANNING) P.W.D,
ARUNACHAL PRADESH
ITANAGAR**

FOREWORD

The schedule of Rates for Roads and Bridges works under PWD, Arunachal Pradesh, was last revised in 2010. As per Guidelines in the works manual, in every two years the Schedule of Rates has to be revised for updating current market rates to avoid cost overrun. Hence the latest Arunachal Pradesh Works Department Schedule of Rates (Roads and Bridges) 2012 is now being brought out purely for evaluating cost of the projects by detailed estimation.

Basic structure and methodology has been followed for analysis of items as per the **Standard Data Book of the Ministry of Road Transport and Highways, Govt of India, New Delhi**. The related computer programme of ministry has been deployed for undertaking the analysis. Therefore the execution of items of works in the scheduled at site shall be done in concurrence with the **MoRTH specification for Road and Bridge works**.

The basic rates adopted in this schedule for cement, reinforcing bars, structural steel and bitumen are based on the market rates prevailing at Guwahati. The rates for sand, aggregates and other forest products are based on the prevailing average rates at quarry or source of collection and inclusive of State and Central taxes, any local monopoly charge etc. but exclusive of VAT.


It is highly emphasised that while adopting the SOR, the user may acquaint themselves with the preambles attached before every chapters. The rates for completed items at the site of works shall be inclusive of basic rates of materials plus the actual carriage of the materials from source/approved quarry to the site of works. The carriage of each category of materials can be worked out with the carriage chart attached with this SOR prepared for both for Plain and Hill road parameters based on status of road in hilly Himalaya region of Arunachal Pradesh.

Although, all care has been taken to update the schedule in the best possible manner, there may be still undetected error and scope for its further improvement. All Superintending Engineers, Executive Engineers, Assistant Engineer under PWD and other works department may, therefore feel free to point out any error, or give their valuable suggestions for further improvement and feedback on reasonability of rates while preparing estimates.

I would like to record my sincere appreciation of the efforts of Er,Hage Pilliya, SSW(D&P) and his team of dedicated officers especially Er. Gobo Yirang, SW(D&P), Er.S.Syed Ummer, JE(D&P) and other staff in bringing out this Schedule of Rate 2012 with a teamwork spirit.

It is brought to notice of all field engineers that, we are in continuous process of updating the schedule for release of APSR 2014. Therefore a realistic feedback of rate of actual procurement from sources may sent to this office for incorporating a realistic basic rates of materials in next schedule.

Finally, I take pleasure in releasing the **Arunachal Pradesh Public Works Department Schedule of Rates (Roads and Bridges) 2012** for its official use.



(Atop Lego)
Chief Engineer (SID&P)
PWD, Itanagar, AP.

INDEX

SUMMARY OF RATES	
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CHAPTER-1	CARRIAGE OF MATERIALS
CHAPTER-2	SITE CLEARANCE
CHAPTER-3	EARTH WORK, EROSION CONTROL AND DRAINAGE
CHAPTER-4	SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS
CHAPTER-5	BASES AND SURFACE COURSES (BITUMINOUS)
CHAPTER-6	CEMENT CONCRETE PAVEMENTS
CHAPTER-7	GEOSYNTHETICS AND REINFORCED EARTH
CHAPTER-8	TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES
CHAPTER-9	PIPE CULVERTS
CHAPTER-10	MAINTENANCE OF ROADS
CHAPTER-11	HORTICULTURE
CHAPTER-12	FOUNDATIONS
CHAPTER-13	SUB-STRUCTURE
CHAPTER-14	SUPER-STRUCTURE
CHAPTER-15	RIVER TRAINING AND PROTECTION WORKS
CHAPTER-16	REPAIR AND REHABILITATION
CHAPTER-17	STEEL BRIDGES

**LEAD CHART FOR CARRIAGE OF MATERIALS TO VARIOUS DESTINATIONS
IN ARUNACHAL PRADESH FROM GUWAHATI**

UNDER WESTERN ZONE

CAPITAL CIRCLE

- | | | | |
|----|----------------------------|---|---------|
| 1. | Guwahati to CD'A",Itanagar | = | 410 Km. |
| 2. | Guwahati to Naharlagun | = | 400 Km. |
| 3. | Guwahati to Doimukh | = | 397 Km. |
| 4. | Guwahati to CD'B',Itanagar | = | 410 Km. |

BOBIA CIRCLE

- | | | | |
|----|---------------------|---|---------|
| 1. | Guwahati to Seppa | = | 410 Km. |
| 2. | Guwahati to Bameng | = | 462 Km. |
| 3. | Guwahati to Sagalee | = | 468 Km. |

RUPA CIRCLE

- | | | | |
|----|-----------------------|---|---------|
| 1. | Guwahati to Bomdila | = | 364 Km. |
| 2. | Guwahati to Tawang | = | 545 Km. |
| 3. | Guwahati to Jung | = | 505 Km. |
| 4. | Guwahati to Kalaktang | = | 398 Km. |
| 5. | Guwahati to Dirang | = | 406 Km. |
| 6. | Guwahati to Lumla | = | 585 Km. |

UNDER CENTRAL ZONE 'A'

BASAR CIRCLE

- | | | | |
|----|-----------------------|---|---------|
| 1. | Guwahati to Basar | = | 621 Km. |
| 2. | Guwahati to Dumporijo | = | 736 Km. |
| 3. | Guwahati to Daporijo | = | 745 Km. |
| 4. | Guwahati to Gensi | = | 561 Km. |
| 5. | Guwahati to Nacho | = | 860 Km. |

YACHULI CIRCLE

- | | | | |
|----|---------------------|---|---------|
| 1. | Guwahati to Ziro | = | 531 Km. |
| 2. | Guwahati to Sangram | = | 616 Km. |
| 3. | Guwahati to Tali | = | 676 Km. |
| 4. | Guwahati to Yazali | = | 496 Km. |

UNDER CENTRAL ZONE 'B'

BOLENG CIRCLE

- | | | | |
|----|-----------------------|---|---------|
| 1. | Guwahati to Pasighat | = | 620 Km. |
| 2. | Guwahati to Boleng | = | 710 Km. |
| 3. | Guwahati to Yingkiong | = | 785 Km. |
| 4. | Guwahati to Mariyang | = | 837 Km. |
| 5. | Guwahati to Nari | = | 565 Km |

ALONG CIRCLE

- | | | | |
|----|---------------------|---|---------|
| 1. | Guwahati to Along | = | 671 Km. |
| 2. | Guwahati to Yomcha | = | 758 Km. |
| 3. | Guwahati to Rumgong | = | 701 Km. |
| 4. | Guwahati to Mechuka | = | 921 Km. |

UNDER EASTERN ZONE

JAIRAMPUR CIRCLE

- | | | | |
|----|-----------------------|---|---------|
| 1. | Guwahati to Jairampur | = | 587 Km. |
| 2. | Guwahati to Changlang | = | 589 Km. |
| 3. | Guwahati to Khonsa | = | 633 Km. |
| 4. | Guwahati to Longding | = | 685 Km. |
| 5. | Guwahati to Kanubari | = | 645 Km. |

TEZU CIRCLE

- | | | | |
|----|-----------------------------|---|---------|
| 1. | Guwahati to Namsai | = | 545 Km. |
| 2. | Guwahati to Tezu | = | 602 Km. |
| 3. | Guwahati to Roing via Makum | = | 587 Km. |
| 4. | Guwahati to Hayuliang | = | 702 Km. |
| 5. | Guwahati to Anini | = | 821 Km. |

**CARRIAGE OF MATERIALS BY MECHANICAL TRANSPORT
(INCLUDING LOADING, UNLOADING AND STACKING)**

Lead in Km (L)	Average speed (S)	Number of trips (N) =8/(2L/S) +1	Number of KM done (2NL+6)	Diesel consu- mption (Litre)	Cost of Diesel @ Rs.46.52 per Litre	Mobil oil consu- mption (Litre)	Cost of Mobil oil @ Rs.230.00 per Litre	Cost of labour (male) 5 Nos. @ Rs.250 M/R Per Day	Hire Charges of truck per day Rs.3,900	Total Cost (C6+C8 C9+C10)	Cost per trip (C11/C3)	Increase in cost per Km over previous Km	Avg. cost per addl.Km after 1st (5Km, 10Km, 20Km)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	16.00	7.11	20.22	4.04	187.94	0.144	33.12	1250.00	3900.00	5371.06	755.31	-	
2	17.00	6.48	31.90	6.38	296.8	0.228	52.44	1250.00	3900.00	5499.24	849.15	93.84	
3	17.50	5.96	41.74	8.35	388.44	0.298	68.54	1250.00	3900.00	5606.98	941.17	92.02	
4	18.00	5.54	50.31	10.06	467.99	0.359	82.57	1250.00	3900.00	5700.56	1029.27	88.10	
5	18.50	5.19	57.93	11.59	539.17	0.414	95.22	1250.00	3900.00	5784.39	1113.89	84.62	
6	19.00	4.90	64.84	12.97	603.36	0.463	106.49	1250.00	3900.00	5859.85	1195.10	81.21	
7	19.50	4.66	71.19	14.24	662.44	0.509	117.07	1250.00	3900.00	5929.51	1273.32	78.22	
8	20.00	4.44	77.11	15.42	717.34	0.551	126.73	1250.00	3900.00	5994.07	1348.67	75.35	75.58
9	20.50	4.26	82.68	16.54	769.44	0.591	135.93	1250.00	3900.00	6055.37	1421.54	72.87	
10	21.00	4.10	87.95	17.59	818.29	0.628	144.44	1250.00	3900.00	6112.73	1491.80	70.26	
11	21.50	3.95	92.99	18.60	865.27	0.664	152.72	1250.00	3900.00	6167.99	1559.93	68.13	
12	22.00	3.83	97.83	19.57	910.4	0.699	160.77	1250.00	3900.00	6221.17	1625.99	66.06	
13	22.50	3.71	102.49	20.50	953.66	0.732	168.36	1250.00	3900.00	6272.02	1689.96	63.97	
14	23.00	3.61	107.02	21.40	995.53	0.764	175.72	1250.00	3900.00	6321.25	1752.09	62.13	
15	23.50	3.51	111.42	22.28	1036.47	0.796	183.08	1250.00	3900.00	6369.55	1812.61	60.52	
16	24.00	3.43	115.71	23.14	1076.47	0.827	190.21	1250.00	3900.00	6416.68	1871.53	58.92	60.10
17	24.50	3.35	119.91	23.98	1115.55	0.857	197.11	1250.00	3900.00	6462.66	1928.91	57.38	
18	25.00	3.28	124.03	24.81	1154.16	0.886	203.78	1250.00	3900.00	6507.94	1984.92	56.01	
19	25.50	3.21	128.08	25.62	1191.84	0.915	210.45	1250.00	3900.00	6552.29	2039.56	54.64	
20	26.00	3.15	132.06	26.41	1228.59	0.943	216.89	1250.00	3900.00	6595.48	2092.80	53.24	
21	26.50	3.09	135.99	27.20	1265.34	0.971	223.33	1250.00	3900.00	6638.67	2145.04	52.24	
22	27.00	3.04	139.86	27.97	1301.16	0.999	229.77	1250.00	3900.00	6680.93	2196.05	51.01	
23	27.50	2.99	143.69	28.74	1336.98	1.026	235.98	1250.00	3900.00	6722.96	2246.08	50.03	
24	28.00	2.95	147.47	29.49	1371.87	1.053	242.19	1250.00	3900.00	6764.06	2294.95	48.87	
25	28.50	2.90	151.22	30.24	1406.76	1.080	248.4	1250.00	3900.00	6805.16	2343.00	48.05	47.78
26	29.00	2.86	154.94	30.99	1441.65	1.107	254.61	1250.00	3900.00	6846.26	2390.29	47.29	
27	29.50	2.83	158.62	31.72	1475.61	1.133	260.59	1250.00	3900.00	6886.20	2436.43	46.14	
28	30.00	2.79	162.28	32.46	1510.04	1.159	266.57	1250.00	3900.00	6926.61	2482.04	45.61	
29	30.50	2.76	165.91	33.18	1543.53	1.185	272.55	1250.00	3900.00	6966.08	2526.63	44.59	
30	31.00	2.73	169.52	33.90	1577.03	1.211	278.53	1250.00	3900.00	7005.56	2570.59	43.96	

CARRIAGE OF MATERIALS BY MECHANICAL TRANSPORT
(INCLUDING LOADING, UNLOADING AND STACKING)

Sl. No.	Material	Capacity (Net)	Unit of Rate	1 Km	2 Km	3 Km	4 Km	5 Km	Beyond 5 Km upto 10 Km addl. per Km	Beyond 10 Km upto 20 Km addl. per Km	Beyond 20 Km upto 30 Km addl. per Km	Beyond 30 Km addl. per Km
	Cost per trip			755.31	849.15	941.17	1029.27	1113.89	75.58	60.10	47.78	47.78
1.	Sand, Lime, Shingle, Aggreagte, Surkhi, Earth, Moorum, Excavated rock and Kerb stone	3.50	Cu.m.	215.8	242.61	268.91	294.08	318.25	21.59	17.17	13.65	13.65
	Add CPOH @ 10%			21.58	24.26	26.89	29.41	31.83	2.16	1.72	1.37	1.37
	Total			237.38	266.87	295.8	323.49	350.08	23.75	18.89	15.02	15.02
2.	Timber, Bamboo and Ballie	4	Cu.m.	188.83	212.29	235.29	257.32	278.47	18.9	15.03	11.94	11.94
	Add CPOH @ 10%			18.88	21.23	23.53	25.73	27.85	1.89	1.5	1.19	1.19
	Total			207.71	233.52	258.82	283.05	306.32	20.79	16.53	13.13	13.13
3.	Cement, Steel, Angle and Tee Channel	7	Ton	107.9	121.31	134.45	147.04	159.13	10.8	8.59	6.83	6.83
	Add CPOH @ 10%			10.79	12.13	13.45	14.7	15.91	1.08	0.86	0.68	0.68
	Total			118.69	133.44	147.9	161.74	175.04	11.88	9.45	7.51	7.51
4.	Bricks	1500	1000	503.54	566.1	627.45	686.18	742.59	50.39	40.07	31.85	31.85
	Add CPOH @ 10%			50.35	56.61	62.75	68.62	74.26	5.04	4.01	3.19	3.19
	Total			553.89	622.71	690.2	754.80	816.85	55.43	44.08	35.04	35.04
5.	Tar, Bitumen and Firewood	5	Ton	151.06	169.83	188.23	205.85	222.78	15.12	12.02	9.56	9.56
	Add CPOH @ 10%			15.11	16.98	18.82	20.59	22.28	1.51	1.2	0.96	0.96
	Total			166.17	186.81	207.05	226.44	245.06	16.63	13.22	10.52	10.52
6.	Stone for masonry & soling	3.50	Cu.m.	215.80	242.61	268.91	294.08	318.25	21.59	17.17	13.65	13.65
	Add CPOH @ 10%			21.58	24.26	26.89	29.41	31.83	2.16	1.72	1.37	1.37
	Total			237.38	266.87	295.8	323.49	350.08	23.75	18.89	15.02	15.02
7.	SW Pipe											
	a) 100 mm dia.	480	100 m	157.36	176.91	196.08	214.43	232.06	15.75	12.52	9.95	9.95
	Add CPOH @ 10%			15.74	17.69	19.61	21.44	23.21	1.58	1.25	1	1
	Total			173.1	194.6	215.69	235.87	255.27	17.33	13.77	10.95	10.95
	b) 150 mm dia.	240	100 m	314.71	353.81	392.15	428.86	464.12	31.49	25.04	19.91	19.91
	Add CPOH @ 10%			31.47	35.38	39.22	42.89	46.41	3.15	2.5	1.99	1.99
	Total			346.18	389.19	431.37	471.75	510.53	34.64	27.54	21.9	21.9

CARRIAGE OF MATERIALS BY MECHANICAL TRANSPORT
(INCLUDING LOADING, UNLOADING AND STACKING)

Sl. No.	Material	Capacity (Net)	Unit of Rate	1 Km	2 Km	3 Km	4 Km	5 Km	Beyond 5 Km upto 10 Km addl. per Km	Beyond 10 Km upto 20 Km addl. per Km	Beyond 20 Km upto 30 Km addl. per Km	Beyond 30 Km addl. per Km
	Cost per trip			755.31	849.15	941.17	1029.27	1113.89	75.58	60.10	47.78	47.78
	c) 200 mm dia. Add CPOH @ 10% Total	135	100 m	559.49 55.95 615.44	629 62.9 691.90	697.16 69.72 766.88	762.42 76.24 838.66	825.1 82.51 907.61	55.99 5.6 61.59	44.52 4.45 48.97	35.39 3.54 38.93	35.39 3.54 38.93
	d) 230 mm dia. Add CPOH @ 10% Total	105	100 m	719.34 71.93 791.27	808.71 80.87 889.58	896.35 89.64 985.99	980.26 98.03 1078.29	1060.85 106.09 1166.94	71.98 7.2 79.18	57.24 5.72 62.96	45.5 4.55 50.05	45.5 4.55 50.05
	e) 250 mm dia. Add CPOH @ 10% Total	84	100 m	899.18 89.92 989.1	1010.89 101.09 1111.98	1120.44 112.04 1232.48	1225.32 122.53 1347.85	1326.06 132.61 1458.67	89.98 9 98.98	71.55 7.16 78.71	56.88 5.69 62.57	56.88 5.69 62.57
	f) 300 mm dia. Add CPOH @ 10% Total	66	100 m	1144.41 114.44 1258.85	1286.59 128.66 1415.25	1426.02 142.6 1568.62	1559.5 155.95 1715.45	1687.71 168.77 1856.48	114.52 11.45 125.97	91.06 9.11 100.17	72.39 7.24 79.63	72.39 7.24 79.63
	g) 350 mm dia. Add CPOH @ 10% Total	48	100 m	1573.56 157.36 1730.92	1769.06 176.91 1945.97	1960.77 196.08 2156.85	2144.31 214.43 2358.74	2320.6 232.06 2552.66	157.46 15.75 173.21	125.21 12.52 137.73	99.54 9.95 109.49	99.54 9.95 109.49
	h) 400 mm dia. Add CPOH @ 10% Total	33	100 m	2288.82 228.88 2517.70	2573.18 257.32 2830.5	2852.03 285.2 3137.23	3119 311.9 3430.9	3375.42 337.54 3712.96	229.04 22.90 251.94	182.12 18.21 200.33	144.78 14.48 159.26	144.78 14.48 159.26
	i) 450 mm dia. Add CPOH @ 10% Total	27	100 m	2797.44 279.74 3077.18	3145.00 314.5 3459.5	3485.81 348.58 3834.39	3812.11 381.21 4193.32	4125.52 412.55 4538.07	279.93 27.99 307.92	222.59 22.26 244.85	176.96 17.70 194.66	176.96 17.70 194.66
	j) 500 mm dia. Add CPOH @ 10% Total	24	100 m	3147.13 314.71 3461.84	3538.13 353.81 3891.94	3921.54 392.15 4313.69	4288.63 428.86 4717.49	4641.21 464.12 5105.33	314.93 31.49 346.42	250.42 25.04 275.46	199.08 19.91 218.99	199.08 19.91 218.99
	k) 600 mm dia. Add CPOH @ 10% Total	18	100 m	4196.17 419.62 4615.79	4717.50 471.75 5189.25	5228.72 522.87 5751.59	5718.17 571.82 6289.99	6188.28 618.83 6807.11	419.9 41.99 461.89	333.89 33.39 367.28	265.44 26.54 291.98	265.44 26.54 291.98
8. RC Pipes, AC Pipes, Hume, Steel and CI Pipe												
	a) 100 mm dia. Add CPOH @ 10% Total	292.80	100 m	257.96 25.8 283.76	290.01 29 319.01	321.44 32.14 353.58	351.53 35.15 386.68	380.43 38.04 418.47	25.81 2.58 28.39	20.53 2.05 22.58	16.32 1.63 17.95	16.32 1.63 17.95
	b) 125 mm dia. Add CPOH @ 10% Total	219.60	100 m	343.95 34.4 378.35	386.68 38.67 425.35	428.58 42.86 471.44	468.7 46.87 515.57	507.24 50.72 557.96	34.42 3.44 37.86	27.37 2.74 30.11	21.76 2.18 23.94	21.76 2.18 23.94

CARRIAGE OF MATERIALS BY MECHANICAL TRANSPORT
(INCLUDING LOADING, UNLOADING AND STACKING)

Sl. No.	Material	Capacity (Net)	Unit of Rate	1 Km	2 Km	3 Km	4 Km	5 Km	Beyond 5 Km upto 10 Km addl. per Km	Beyond 10 Km upto 20 Km addl. per Km	Beyond 20 Km upto 30 Km addl. per Km	Beyond 30 Km addl. per Km
	Cost per trip			755.31	849.15	941.17	1029.27	1113.89	75.58	60.10	47.78	47.78
	c) 150 mm dia. Add CPOH @ 10% Total	183	100 m	412.74 41.27 454.01	464.02 46.4 510.42	514.30 51.43 565.73	562.44 56.24 618.68	608.68 60.87 669.55	41.3 4.13 45.43	32.84 3.28 36.12	26.11 2.61 28.72	26.11 2.61 28.72
	d) 200 mm dia. Add CPOH @ 10% Total	109.80	100 m	687.9 68.79 756.69	773.36 77.34 850.7	857.17 85.72 942.89	937.40 93.74 1031.14	1014.47 101.45 1115.92	68.84 6.88 75.72	54.74 5.47 60.21	43.51 4.35 47.86	43.51 4.35 47.86
	e) 250 mm dia. Add CPOH @ 10% Total	80.52	100 m	938.04 93.8 1031.84	1054.58 105.46 1160.04	1168.86 116.89 1285.75	1278.28 127.83 1406.11	1383.37 138.34 1521.71	93.87 9.39 103.26	74.64 7.46 82.10	59.34 5.93 65.27	59.34 5.93 65.27
	f) 300 mm dia. Add CPOH @ 10% Total	62.22	100 m	1213.93 121.39 1335.32	1364.75 136.48 1501.23	1512.65 151.27 1663.92	1654.24 165.42 1819.66	1790.24 179.02 1969.26	121.48 12.15 133.63	96.59 9.66 106.25	76.79 7.68 84.47	76.79 7.68 84.47
	g) 350 mm dia. Add CPOH @ 10% Total	43.92	100 m	1719.74 171.97 1891.71	1933.4 193.34 2126.74	2142.92 214.29 2357.21	2343.51 234.35 2577.86	2536.18 253.62 2789.8	172.09 17.21 189.3	136.84 13.68 150.52	108.79 10.88 119.67	108.79 10.88 119.67
	h) 400 mm dia. Add CPOH @ 10% Total	32.94	100 m	2292.99 229.3 2522.29	2577.87 257.79 2835.66	2857.23 285.72 3142.95	3124.68 312.47 3437.15	3381.57 338.16 3719.73	229.45 22.95 252.4	182.45 18.25 200.7	145.05 14.51 159.56	145.05 14.51 159.56
	i) 450 mm dia. Add CPOH @ 10% Total	25.62	100 m	2948.13 294.81 3242.94	3314.4 331.44 3645.84	3673.58 367.360 4040.94	4017.45 401.75 4419.2	4347.74 434.77 4782.51	295.01 29.5 324.51	234.58 23.46 258.04	186.49 18.65 205.14	186.49 18.65 205.14
	j) 600, 700, 750, 800, 900, 1200 mm dia. Add CPOH @ 10% Total	18.30	100 m	4127.38 412.74 4540.12	4640.16 464.02 5104.18	5143.01 514.30 5657.31	5624.43 562.44 6186.87	6086.83 608.68 6695.51	413.02 41.3 454.32	328.42 32.84 361.26	261.09 26.11 287.2	261.09 26.11 287.2

(A) Usage Rates of Plant and Machinery

Sl. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate
P&M-001	Air Compressor	General Purpose	capacity in cfm	170/250	hour	516
P&M-002	Batching and Mixing Plant (a) 30 cum capacity	Concrete Mixing	cum/hour	20	hour	2440
P&M-003	Batching and Mixing Plant (b) 15 - 20 cum capacity	Concrete Mixing	cum/hour	13	hour	2033
P&M-004	Bitumen Pressure Distributor	Applying bitumen tack coat	sqm/hour	1750	hour	1174
P&M-005	Bitumen Boiler oil fired	Bitumen Spraying	capacity in litre	1500	hour	217
P&M-006	Concrete Paver Finisher with 40 HP Motor	Paving of concrete surface	cum / hour	20	hour	2923
P&M-007	Concrete Pump of 45 & 30 cum capacity	Pumping of concrete	cum / hour	33 / 22	hour	279
P&M-008	Concrete Bucket	For Pouring concrete	capacity in cum	1	hour	17
P&M-009	Concrete Mixer (a) 0.4/0.28 cum	Concrete Mixing	cum/hour	2.5	hour	242
P&M-010	Concrete Mixer (b) 1 cum	Concrete Mixing	cum/hour	7.5	hour	242
P&M-011	Crane (a) 80 tonnes	Lifting Purpose			hour	1398
P&M-012	Cranes b) 35 tonnes	Lifting Purpose			hour	932
P&M-013	Cranes c) 3 tonnes	Lifting Purpose			hour	389
P&M-014	Dozer D - 80 - A 12	Spreading /Cutting / Clearing	cum/hour	300/ 150/250	hour	3615
P&M-015	Dozer D - 50 - A 15	Spreading /Cutting / Clearing	cum/hour	200/ 120/150	hour	2632
P&M-016	Emulsion Pressure Distributor	Applying emulsion tack coat	sqm/hour	1750	hour	873
P&M-017	Front End loader 1 cum bucket capacity	Soil loading / Aggregate loading	cum/hour	60 /25	hour	1253
P&M-018	Generator (a) 125 KVA	Generation of electric Energy	KVA	100	hour	787
P&M-019	Generator(b) 63 KVA	Generation of electric Energy	KVA	50	hour	545
P&M-020	GSB Plant 50 cum	Producing GSB	cum/hour	40	hour	1135
P&M-021	Hotmix Plant - 120 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	40	hour	25579
P&M-022	Hotmix Plant - 100 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	30	hour	18917
P&M-023	Hotmix Plant - 60 to 90 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	25	hour	15127
P&M-024	Hotmix Plant - 40 to 60 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	17	hour	12112
P&M-025	Hydraulic Chip Spreader	Surface Dressing	sqm/hour	1500	hour	2880
P&M-026	Hydraulic Excavator of 1 cum bucket	Soil Ordinary/Soil Marshy / Soil Unsuitable	cum/hour	60 /60 /60	hour	1571
P&M-027	Integrated Stone Crusher 100THP	Crushing of Spalls	TPH	100	hour	9470
P&M-028	Integrated Stone Crusher 200 HP	Crushing of Spalls	TPH	200	hour	19921
P&M-029	Kerb Casting Machine	Kerb Making	Rm/hour	80	hour	339
P&M-030	Mastic Cooker	Mastic Wearing coat	capacity in tonne	1	hour	68
P&M-031	Mechanical Broom Hydraulic	Surface Cleaning	sqm/hour	1250	hour	389
P&M-032	Motor Grader 3.35 mtr blade	Clearing /Spreading /GSB /WBM	cum/hour	200/200/50/50	hour	2617
P&M-033	Mobile slurry seal equipment	Mixing and laying slurry seal	sqm/hour	2700	hour	1101

P&M-034	Paver Finisher Hydrostatic with sensor control 100 TPH	Paving of DBM/ BM/SDC/ Premix	cum/hour	40	hour	2923
P&M-035	Paver Finisher Mechanical 100 TPH	Paving of WMM /Paving of DLC	cum/hour	40/30	hour	1065
P&M-036	Piling Rig with Bantonite Pump	0.75 m dia to 1.2 m dia Boring attachment	Rm/hour	2 to 3	hour	5972
P&M-037	Pneumatic Road Roller	Rolling of Asphalt Surface	cum/hour	25	hour	1359
P&M-038	Pneumatic Sinking Plant	Pneumatic Sinking of wells	cum/hour	1.5 to 2.00	hour	4557
P&M-039	Pot Hole Repair Machine	Repair of potholes	cum/hour	4	hour	991
P&M-040	Prestressing Jack with Pump & access	Stressing of steel wires/stands			hour	141
P&M-041	Ripper	Scarifying	cum/hour	60	hour	31
P&M-042	Rotavator	Scarifying	cum/hour	25	hour	19
P&M-043	Road marking machine	Road marking	Sqm/hour	100	hour	101
P&M-044	Smooth Wheeled Roller 8 tonne	Soil Compaction /BM Compaction	cum/hour	70/25	hour	504
P&M-045	Tandem Road Roller	Rolling of Aspalt Surface	cum/hour	30	hour	1250
P&M-046	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	km	31
P&M-047	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	tonne.km	0
P&M-048	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	hour	609
P&M-049	Transit Mixer 4.0/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	hour	1016
P&M-050	Transit Mixer 4/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	tonne.km	0
P&M-051	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	hour	932
P&M-052	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	tonne.km	0
P&M-053	Tractor	Pulling	capacity in HP	50	hour	427
P&M-054	Tractor with Rotevator	Rate of Tractor + Rotevator			hour	366
P&M-055	Tractor with Ripper	Rate of Tractor 6+ Ripper			hour	377
P&M-056	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	km	24
P&M-057	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	hour	488
P&M-058	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	tonne.km	24
P&M-059	Three wheel 80-100 kN Statis Roller	Earth or soil / GSB / WBM	cum/hour	100/60/60	hour	658
P&M-060	Water Tanker	Water Transport	capacity in KL	6	hour	488
P&M-061	Water Tanker	Water Transport	capacity in KL	6	km	24
P&M-062	Wet Mix Plant 60 TPH	Wet Mix	cum/hour	25	hour	1317
Sl. No.	Description of Machine				Unit	Rates
P&M-063	Air compressor with pneumatic chisel attachment for cutting hard clay.				hour	569
P&M-064	Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour				hour	18755
P&M-065	Belt conveyor system				hour	1815
P&M-066	Boat to carry atleast 20 persons				hour	1815
P&M-067	Cement concrete batch mix plant @ 20 cum per hour (effective output)				hour	3170
P&M-068	Cement concrete batch mix plant @ 75 cum per hour				hour	4235
P&M-069	Cold milling machine @ 20 cum per hour				hour	input
P&M-070	Crane 5 tonne capacity				hour	666

P&M-071	Crane 10 tonne capacity	hour	690
P&M-072	Crane 15 tonne capacity	hour	726
P&M-073	Crane 20 tonne capacity	hour	787
P&M-074	Crane 40 T capacity	hour	968
P&M-075	Crane with grab 0.75 cum capacity	hour	726
P&M-076	Compressor with guniting equipment along with accessories	hour	726
P&M-077	Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	363
P&M-078	Epoxy Injection gun	hour	3025
P&M-079	Generator 33 KVA	hour	407
P&M-080	Generator 100 KVA	hour	762
P&M-081	Generator 250 KVA	hour	908
P&M-082	Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	input
P&M-083	Joint Cutting Machine with 2-3 blades (for rigid pavement)	hour	97
P&M-084	Jack for Lifting 40 tonne lifting capacity.	day	input
P&M-085	Piling rig Including double acting pile driving hammer (Hydraulic rig)	hrs	5972
P&M-086	Plate compactor	hour	303
P&M-087	Snow blower equipment 140 HP @ 600 cum per hour	hour	input
P&M-088	Texturing machine (for rigid pavement)	hour	242
P&M-089	Truck Tractor 30 tonne capacity	hour	input
P&M-090	Truck Tractor 30 tonne capacity	t.km	input
P&M-091	Tunnel Boring machine	hour	input
P&M-092	Vibrating Pile driving hammer complete with power unit and accessories.	hour	input
P&M-093	Wet Mix Plant 100 TPH	hour	1815
P&M-094	Wet Mix Plant 75 TPH		1452

(B) Labour			
Sl. No.	Description of Labour	Unit	Rate
L-01	Blacksmith (IInd class)	day	300
L-02	Blacksmith (Ist class)/ Welder/ Plumber/ Electrician	day	400
L-03	Blaster (Stone cutter)	day	300
L-04	Carpenter I Class	day	400
L-05	Chiseller (Head Mazdoor)	day	300
L-06	Driller (Jumper)	day	300
L-07	Diver	day	700
L-08	Fitter	day	400
L-09	Mali	day	300
L-10	Mason (IInd class)	day	300
L-11	Mason (Ist class)	day	400
L-12	Mate / Supervisor	day	300
L-13	Mazdoor	day	250
L-14	Mazdoor/Dresser (Semi Skilled)	day	300
L-15	Mazdoor/Dresser/Sinker (Skilled)	day	400
L-16	Medical Officer	day	1200
L-17	Operator(grouting)	day	400
L-18	Painter I class	day	400
L-19	Para medical personnel	day	700
(C) Materials			
Sl. No.	Description	Unit	Rate
M-001	Stone Boulder of size 150 mm and below at Cruser Plant	cum	518
M-002	Supply of quarried stone 150 - 200 mm size for Hand Broken at site	cum	490
M-003	Boulder with minimum size of 300 mm for Pitching at Site	cum	435
M-004	Coarse sand at Mixing Plant	cum	540
M-005	Coarse sand at Site	cum	540
M-006	Fine sand at Site	cum	540
M-007	Moorum at Site	cum	250
M-008	Gravel/Quarry spall at Site	Cum	400
M-009	Granular Material or hard murrum for GSB works at Site	Cum	390
M-010	Granular Material or hard murrum for GSB works at Mixing Plant	Cum	250
M-011	Fly ash conforming to IS: 3812 (Part II & I) atHMP Plant / Batching Plant / Crushing Plant	Cum	input
M-012	Filter media/Filter Material as per Table 300-3 (MoRT&H Specification)	Cum	1150

	Description	Unit	Rate at Plant (HMP/Batchi ng)	Rate at Site
M-013	Close graded Granular sub-base Material 53 mm to 9.5 mm	cum	800	800
M-014	Close graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	850	850
M-015	Close graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	650	650
M-016	Close graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	700	700
M-017	Close graded Granular sub-base Material 9.5 mm to 2.36 mm	cum	680	680
M-018	Close graded Granular sub-base Material 4.75mm to 2.36 mm	cum	600	600
M-019	Close graded Granular sub-base Material 4.75mm to 75 micron mm		580	580
M-020	Close graded Granular sub-base Material 2.36 mm	cum	540	540
M-021	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve.	cum	560	560
M-022	Coarse graded Granular sub-base Material 2.36 mm & below	cum	560	560
M-023	Coarse graded Granular sub-base Material 4.75mm to 75 micron mm		600	600
M-024	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm	cum	600	600
M-025	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	650	650
M-026	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm	cum	700	700
M-027	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	750	750
M-028	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	800	800
M-029	Coarse graded Granular sub-base Material 53 mm to 26 .5mm	cum	850	850
M-030	Aggregates below 5.6 mm	cum	1640	1640
M-031	Aggregates 22.4 mm to 2.36 mm	cum	875	875
M-032	Aggregates 22.4 mm to 5.6 mm	cum	1365	1365
M-033	Aggregates 45 mm to 2.8 mm	cum	640	640
M-034	Aggregates 45 mm to 22.4 mm	cum	850	850
M-035	Aggregates 53 mm to 2.8 mm	cum	700	700
M-036	Aggregates 53 mm to 22.4 mm	cum	826	826
M-037	Aggregates 63 mm to 2.8 mm	cum	675	675
M-038	Aggregates 63 mm to 45 mm	cum	804	804
M-039	Aggregates 90 mm to 45 mm	cum	782	782
M-040	Aggregates 10 mm to 5 mm	cum	1750	1750
M-041	Aggregates 11.2 mm to 0.09 mm	cum	950	950
M-042	Aggregates 13.2 mm to 0.09 mm	cum	815	815
M-043	Aggregates 13.2 mm to 5.6 mm	cum	1500	1500
M-044	Aggregates 13.2 mm to 10 mm	cum	1338	1338
M-045	Aggregates 20 mm to 10 mm	cum	1400	1400
M-046	Aggregates 25 mm to 10 mm	cum	1350	1350
M-047	Aggregates 19 mm to 6 mm	cum	1465	1465
M-048	Aggregates 37.5 mm to 19 mm	cum	950	950
M-049	Aggregates 37.5 mm to 25 mm	cum	850	850
M-050	Aggregates 6 mm nominal size	cum	1740	1740
M-051	Aggregates 10 mm nominal size	cum	1750	1750
M-052	Aggregates 13.2/12.5 mm nominal size	cum	1700	1700
M-053	Aggregates 20 mm nominal size	cum	1600	1600
M-054	Aggregates 25 mm nominal size	cum	1550	1550
M-055	Aggregates 40 mm nominal size	cum	1250	1250

Sl. No.	Description	Unit	Rate
M-056	AC pipe 100 mm dia	metre	31
M-057	Acrylic polymer bonding coat	litre	121
M-058	Aluminium Paint	litre	303
M-059	Aluminium alloy plate 2mm Thick	sqm	input
M-060	Aluminium alloy/galvanised steel	tonne	53931
M-061	Aluminium sheeting fixed with encapsulated lens type reflective sheeting including 2% towards lettering, cost of angle iron, cost of drilling holes, nuts, bolts etc.and signs as applicable	sqm	145
M-062	Aluminium studs 100 x 100 mm fitted with lense reflectors	nos	484
M-063	Barbed wire	kg	90
M-064	Bearing (Cost of parts)	nos	input
M-065	Bearing (Cast steel rocker bearing assembly of 250 tonne)	nos	302500
M-066	Bearing (Elastomeric bearing assembly consisting of 7 internal layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation,)	nos	14520
M-067	Bearing (Forged steel roller bearing of 250 tonne	nos	266200
M-068	Bearing (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	nos	60500
M-069	Bearing (PTFE sliding plate bearing assembly of 80 tonnes)	nos	181500
M-070	Bearing (Supply of sliding plate bearing of 80 tonne)	nos	14520
M-071	Bentonite	kg	2.45
M-072	Binding wire	kg	80
M-073	Bitumen (Cationic Emulsion)	tonne	39586
M-074	Bitumen (60-70 grade)	tonne	49642
M-075	Bitumen (80-100 grade)	tonne	48810
M-076	Bitumen (Cutback)	tonne	52367
M-077	Bitumen (emulsion)	tonne	39586
M-078	Bitumen (modified graded)	tonne	44379
M-079	Brick	each	9
M-080	C.I.shoes for the pile	kg	55
M-081	Cement	tonne	8120
M-082	Cold twisted bars (HYSD Bars)	tonne	53650
M-083	Collar for joints 300 mm dia	nos	126
M-084	Compressible Fibre Board(20mm thick)	sqm	682
M-085	Connectors/ Staples	each	55
M-086	Copper Plate(12m long x 250mmwide)	kg	660
M-087	Corrosion resistant Structural steel	tonne	61
M-088	Corrugated sheet, 3 mm thick, "Thrie" beam section railing	kg	60
M-089	Credit for excavated rock found suitable for use	cum	231
M-090	Curing compound	liter	49
M-091	Delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	input
M-092	Earth Cost or compensation for earth taken from private land	cum	0
M-093	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),	metre	9900
M-094	Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	100 nos	990
M-095	Epoxy compound with accessories for preparing epoxy mortar	kg	220
M-096	Epoxy mortar	kg	input
M-097	Epoxy primer	kg	121
M-098	Epoxy resin-hardner mix for prime coat	kg	99
M-099	Flag of red color cloth 600 x 600 mm	each	60
M-100	Flowering Plants	each	13
M-101	Galvanised MS flat clamp	nos	33
M-102	Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	sqm	170
M-103	Galvanised structural steel plate 200 mm wide, 6 mm thick, 24 m long	kg	198
M-104	Gelatin 80%	kg	148

M-105	Geo grids	sqm	input
M-106	Geomembrane	sqm	input
M-107	Geonets	sqm	input
M-108	Geotextile	sqm	27
M-109	Geotextile filter fabric	sqm	input
M-110	GI bolt 10 mm Dia	nos	38
M-111	Grouting pump with agitator	hour	165
M-112	Grass (Doob)	kg	13
M-113	Grass (Fine)	kg	13
M-114	HDPE pipes 75mm dia	metre	42
M-115	HDPE pipes 90mm dia	metre	input
M-116	Hedge plants	each	7.7
M-117	Helical pipes 600mm diameter	metre	1155
M-118	Hot applied thermoplastic compound	litre	179
M-119	HTS strand	tonne	63800
M-120	Joint Sealant Compound	kg	302
M-121	Jute netting, open weave, 2.5 cm square opening for seeding and Mulching	sqm	13
M-122	LDO for steam curing	litre	40
M-123	M.S. Clamps	nos	55
M-124	M.S. Clamps	kg	220
M-125	M.S.shoes @ 35 Kg per pile of 15 m	kg	50
M-126	Tor Steel bars	tonne	53650
M-127	Modular strip/box seal expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm 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	209000
M-128	Modular strip/box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm 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	231000
M-129	Nipples 12mm	nos	27
M-130	Nuts and bolts	kg	100
M-131	Paint	litre	198
M-132	Pavement Marking Paint	litre	176
M-133	Paving Fabric	sqm	input
M-134	Perforated geosynthetic pipe 150 mm dia	metre	input
M-135	Perforated pipe of cement concrete, internal dia 100 mm	metre	85
M-136	Pesticide	kg	308
M-137	Pipes 200 mm dia, 2.5 m long for drainage	metre	input
M-138	Plastic sheath, 1.25 mm thick for dowel bars	sqm	0.9
M-139	Plastic tubes 50 cm dia, 1.2 m high	nos	input
M-140	Polymer braids	metre	input
M-141	Pre moulded Joint filler,25 mm thick for expansion joint.	sqm	550
M-142	Pre-coated stone chips of 13.2 mm nominal size	cum	1045
M-143	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	4400
M-144	Pre-moulded asphalt filler board	sqm	60
M-145	Pre-packed cement based polymer concrete of strength 45 Mpa at 28 days	kg	33
M-146	Primer	kg	170
M-147	Quick setting compound	kg	50
M-148	Random Rubble Stone	cum	517
M-149	RCC Pipe NP 2 heavy duty non presure pipe 1000 mm dia	metre	852
M-150	RCC Pipe NP 2 heavy duty non presure pipe 1200 mm dia	metre	1155
M-151	RCC Pipe NP 2 heavy duty non presure pipe 300 mm dia	metre	423
M-152	Reflectorising glass beads	kg	208

M-153	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Copper Strips)	metre	input
M-154	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Galvanised carbon steel strips)	metre	input
M-155	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Glass reinforced polymer/fibre reinforced polymer/polymeric strips)	metre	input
M-156	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Stainless steel strips)	metre	input
M-157	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. Aluminium strips)	metre	input
M-158	Rivets	each	0.9
M-159	Sand bags (Cost of sand and Empty cement bag)	nos	8.8
M-160	Sapling 2 m high 25 mm dia	each	88
M-161	Scrap tyres of size 900 x 20	nos	121
M-162	Seeds	kg	302
M-163	Selected earth	cum	181
M-164	Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	27
M-165	Sheathing duct	metre	99
M-166	Shrubs	each	11
M-167	Sludge / Farm yard manure @ 0.18 cum per 100 sqm at site of work for turfing	cum	121
M-168	Sodium vapour lamp	each	1815
M-169	Square Rubble Coursed Stone	cum	517
M-170	Steel circular hollow pole of standard specification for street lighting to mount light at 5 m height above deck level	each	5500
M-171	Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	9075
M-172	Steel drum 300 mm dia 1.2 m high/empty bitumen drum	nos	60
M-173	Steel helmet and cushion block on top of pile head during driving.	kg	181
M-174	Steel pipe 25 mm external dia as per IS:1239	metre	192
M-175	Steel pipe 50 mm external dia as per IS:1239	metre	385
M-176	Steel wire rope 20 mm	kg	245
M-177	Steel wire rope 40 mm	kg	221
M-178	Strip seal expansion join	metre	12100
M-179	Structural Steel	tonne	57210
M-180	Super plastisizer admixture IS marked as per 9103-1999	kg	55
M-181	Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	input
M-182	Through and bond stone	each	13
M-183	Tie rods 20mm diameter	nos	247
M-184	Tiles size 300 x 300 mm and 25 mm thick	each	input
M-185	Timber	cum	15400
M-186	Traffic cones with 150 mm reflective sleeve	nos	1320
M-187	Tube anchorage set complete with bearing plate, permanent wedges etc	nos	4180
M-188	Unstaked lime	tonne	11550
M-189	Water	KL	60
M-190	Water based cement paint	litre	77
M-191	Welded steel wire fabric	kg	44
M-192	Wire mesh 50mm x 50mm size of 3mm wire	kg	145
M-193	Wooden ballies 2" Dia for bracing	each	38
M-194	Wooden ballies 8" Dia and 9 m long	each	495
M-195	Wooden packing	cum	3630
M-196	Wooden staff for fastening of flag 25 mm dia, one m long	each	60

	Overheads for Road Works	10 %					
	Contractors profit for Road Works	10 %					
	Overheads for Bridge Works	20 %			for input of Overheads or Contractors profit please type in collum C as like below		
	Overheads for Bridge Works (Rehabilitation)	10 %			Type symble of apostrophe(') then input value then one space then symble of percentage (%) for example '08 %		
	Contractors profit for Bridge Works	10 %					
	Lead from Mixing Plant to working site	0 km					
	Lead for E/W borrow area to site	3 km					
	Lead for fly ash from source to site	50 km					
Items No.	Summary of Rates calculated and used for analysis of rates of other items					Unit	Rate
Item 8.3	Printing new letter and figures of any shade (ii) English Roman					per cm height per letter	0.60
Item 8.8	Painting Two Coats on New Concrete Surfaces					sqm	65.00
Item 8.9	Painting angle iron post two coats					sqm	61.00
Item 12.6 (B)	Cement mortor 1:2 (Excluding OH & CP)					cum	6,198.00
Item 12.6 (A)	Cement mortor 1:3 (Excluding OH & CP)					cum	4,945.00
Item 12.6 (D)	Cement mortor 1:6 (Excluding OH & CP)					cum	3,224.00
Item 12.7 (A)	Course Rubble masonary in cement mortor 1:3 (including OH & CP)					cum	4,267.00
Item 12.7 (Addl) B)	Random Rubble masonary in cement mortor 1:6 (including OH & CP)					cum	3,467.00
Item 12.8 (A)	PCC Grade M15 including OH & CP for Open Foundation by Mixer					cum	6,107.00
Item 12.8 (A)	PCC Grade M15 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	4,449.00
Item 12.8 (B) PCC	PCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,028.00
Item 12.8 (C)	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,208.00
Item 12.8 (C) RCC	RCC Grade M20 including OH & CP for Open Foundation by Batching Plant					cum	6,822.00
Item 12.8 (C)	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	4,970.00
Item 12.8 (D)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,477.00
Item 12.8 (D)	PCC Grade M25 including OH & CP for Open Foundation by Batching Plant					cum	7,179.00
Item 12.8 (D)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	5,242.00
Item 12.8 (E)	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,663.00
Item 12.8 (E)	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	5,513.00
Item 12.8 (F)	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,526.00
Item 12.8 (F)	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	5,286.00
Item 12.8 (G)	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,690.00
Item 12.8 (G)	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	5,453.00
Item 12.8 (H)	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,814.00
Item 12.8 (H)	RCC Grade M35 including OH & CP for Open Foundation by Batching Plant					cum	5,840.00
Item 12.8 (H)	RCC Grade M35 excluding OH & CP for Open Foundation by Batching Plant					cum	7,709.00
Item 12.8 (H)	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	5,670.00
Item 12.11 (C) i	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,464.00
Item 12.11 (C) i	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	5,223.00
Item 12.11 (C) ii	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,713.00
Item 12.11 (C) ii	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	5,470.00
Item 12.11 (C) iii	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,762.00
Item 12.11 (C) iii	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant					cum	5,521.00
Item 12.11 (C) iv	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer					cum	5,875.00

Item 12.11 (C) iv	PCC Grade M35 including OH & CP for Well Foundation (Bottom Plug) by Batching Plant	cum	7,782.00
Item 12.11 (C) iv	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant	cum	5,632.00
Item 12.11 (F) iv	PCC Grade M35 including OH & CP for Well Foundation (Well Cap) by Batching Plant	cum	7,582.00
Item No. 3.13	Excavation for Structures (Manual Means)	cum	254.00
Item No. 3.13	Excavation for Structures (Mechanical Means)	cum	46.00
Item 14.1(A)	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	7,792.00
Item 14.1(B)	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	8,547.00
Item 14.1(E)	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	9,098.85
Item 14.1(C)	RCC Grade M30 for super-structure including formwork and excluding OH & CP by Batching Plant	cum	6,548.00
Item 14.1(C)	RCC Grade M30 for super-structure excluding formwork and excluding OH & CP by Batching Plant	cum	5,457.00
Item 14.2 A	Supplying ,fitting and placing HYSD bar reinforcement in super-structure excluding OH & CP	tonne	60,305.00
Item 13.6	Supplying, fitting and placing HYSD including OH & CP for sub-structure	tonne	78,328.00
Item 5.17	Fog Seal	sqm	42.00
Item 5.21 Case-I	Crack Prevention courses. Case-I Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm	73.00
Item 5.21 Case-II	Crack Prevention courses. Case-II Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm	84.00
Item 5.21 Case-IV	Crack Prevention courses. Case-III Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %	sqm	110.00
Item 5.21 Case-IV	Crack Prevention courses. Case-IV Bitumen Impregnated Geotextile	sqm	102.00
Item 5.15 Case-I	Slurry Seal Case-I 5 mm thickness	sqm	68.00
Item 5.15 Case-II	Slurry Seal Case-II 3 mm thickness	sqm	47.00
Item 5.15 Case-III	Slurry Seal Case III 1.5 mm thickness	sqm	29.00
Item 5.9 Case-I	Surface Dressing Case-I 19 mm nominal chipping size	sqm	108.00
Item 5.9 Case-II	Surface Dressing Case-II 13 mm nominal size chipping	sqm	87.00

A. Roads Works

Basic Notes for Preparation of Schedule of Rates

The basic approach for the preparation of schedule of rates for Road Works is indicated as under :

Description of items

1. The description of items is given briefly and linked with the relevant clause of the MoRT&H Specifications for Road and Bridge Works, which may be referred for detailed description, provisions and interpretation.

2. **Mechanical Means**

Due to mechanization of construction work, rate for various items have been derived using mechanical means. However, manual means have also been provided for certain cases, where areas may be inaccessible for machines or quantum of work may not be large enough to justify deploy of machines.

3. **Overhead Charges**

- i. Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
- ii. Office furniture, equipment and communications.
- iii. Expenditure on
 - a) Corporate office of contractor
 - b) Site Supervision
 - c) Documentation and "as built" drawings
- iv. Mobilisation/de-mobilisation of resources.
- v. Labour camps with minimum amenities and transportation to work sites.
- vi. Light vehicles for site supervision including administrative and managerial requirements
- vii. Laboratory equipment and quality control including field and laboratory testing
- viii. Minor T&P and survey instruments and setting out works, including verification of line, dimensions, trial pits and bore holes, where required
- ix. Watch and ward
- x. Traffic management during construction
- xi. Expenditure on safeguarding environment
- xii. Sundries
- xiii. Financing Expenditure
- xiv. Sales/Turn over tax
- xv. Work Insurance/compensation

- 3.1 10 percent overhead charges has been considered in the schedule of rates

4. **Contractor Profit**

10 percent of cost of works. Contractor profit is also added on overhead charges.

5. **Basic Inputs**

Basic inputs are only given in the standard data book. The rates for material and labour are as per

6. **Plants and Equipment**

- 6.1 A dozer is proposed for excavation where cutting and filling for the roadway is within 100 m. For longer leads, a combination of hydraulic excavator and tipper is proposed.
- 6.2 Keeping in view the job and managerial factors and the age factor of machines, the output of plant and equipment is taken approximately 70 percent of the rated capacity given by manufacture under ideal conditions.
- 6.3 It has been assumed that a water tanker would make one trip per hour on an average. Water charges have not been included for items where the requirement is very nominal. It is assumed that the same would be covered under sundries.
- 6.4 Output of plant/equipment is considered for the compacted quantities.
- 6.5 The usage charges for machines include ownership charges, cost of repair and maintenance including replacement of tyres and running and operating charges which includes crew, fuel and lubricants.

7. **Materials**

- 7.1 Quantities of materials considered in the rate are approximate for the purpose of estimating and include normal wastages. Actual consumption would have to be based on mix design.
- 7.2 Arunachal Pradesh has typical and hard terrain having different altitude, wherein maximum construction material are brought from Assam and utilised in different station located in state. Hence, to maintain the uniformity in rates, it is decided to prepare the APSR-2005 without considering any lead on materials and aggregate. The transportation cost shall be included in the estimate as per distance from the source of procurement of material/aggregate. The following sources has been adopted in the schedule 2005.
- (1) All steel items/Bitumen product - Guwahati
 - (2) Cement :- Banderdewa/Bhalukpong/Likabali/Dholla/Margherita
 - (3) Bricks :- Klin in Assam nearby to Arunachal Pradesh
 - (4) Aggregate :- At quarry nearby site of work.
 - (5) Other items :- Average market rates fixed for all district headquarter of state.
 - (6) R.C.C. Hume Pipes :- Naharlagun/Likabali or nearby source in Assam.
- 7.3 The alternative proposal for crushing own aggregate by installing crusher is compared with procurement of crushed aggregates from the market and proposal found economical is adopted.
- 7.4 The specifications of materials shall be governed by section 1000 of MoRT&H Specifications for Road and Bridge Works.

8. **Labour**

- 8.1 The average market rate has been adopted which are workable in the state
- 8.2 One mate has been provided for 25 labours

9. **Carriage of Materials**

- 9.1 The unit for vehicle for carriage has been taken as under :
- a) In hours where lead is variable. The loading and unloading for such cases have been provided separately.
 - b) In tonne - km where lead is variable. The loading and unloading for such cases have been provided separately.
 - c) Zero lead has been considered for the stone aggregate in order to work out the actual rates of aggregates by adding the transportation cost up to the site of work.
 - d) In case of Hot Mix Plant Zero lead has been considered. The lead may be considered as per actual location of plant.
- 9.2 Where the quantity of material to be transported is small such as dismantled materials and the same are required to be loaded manually, provision of tractor-trolley has been made instead of tipper.
10. **General :**
- 10.1 The clause numbers refer to MoRT&H Specifications for Road and Bridges Works.
- 10.2 Assumptions made have been indicated in respective chapter in the form of notes, where required.
- 10.3 Sundries to cater for unforeseen contingency and miscellaneous items have been added in the overhead charges.
- 10.4 Arrangement for traffic during construction shall be as per Clause 112 of MoRT&H Specifications for Road and Bridge Works.
- 10.5 Contractor will make his own arrangements for borrowing earth. However, compensation for earth taken from private land has been included in the rate for construction of embankment with borrowed earth.
- 10.6 **Credit for Dismantled Material**
- Credit for dismantled materials has not been included in this schedule of rates. The dismantled materials should be examined and a realistic assessment made for such materials, which can be utilised for works and to be reflected in the estimate.
- 10.7 The source of material and samples are required to be approved by the Engineer before start of any work.
- 10.8 The rates of items include cost of testing of soil, materials and works.
- 10.9 The use of surface by construction vehicles shall be governed by Clause 119 of MoRT&H Specifications.
- 10.10 The contractor shall arrange to provide and maintain an adequate equipment field laboratory as per Clause 121.
- 10.11 Quality Control of works shall be governed by Section 900 of MoRT&H Specifications.
- 10.12 The various activities of works shall also be documented by photographs and video cassettes as per Clauses 125 & 126 of MoRT&H Specifications.
- 10.13 The classification of soil shall be as per Clause 301.2 of MoRT&H Specifications.
- 10.14 The earth excavated from foundations has been considered to be backfilled and balance utilised locally for road work except in the case of marshy soil.

- 10.15 The rate for removal of unsuitable soil does not provide for replacement by suitable soil which will have to be paid separately.
- 10.16 Items for hilly terrain have been analysed separately.
- 10.17 The hire charge rates for machinery and equipment are taken from the Standard Data Book and prevailing market rate.
- 10.18 10 per cent extra cement has been provided for concreting under water, where required.
- 10.19 Grade of cement may be adopted as per mix design.
- 10.20 Quantities of cement in various grades of cement concrete have been taken as per IRC:21-2000 and IRC:18-2000.
- 10.21 The coarse and fine aggregates shall conform to IS:383.
- 10.22 For pricing of RCC slab culverts, the items given in respective chapters in bridge section may be referred.
- 10.23 Some of major steel producing firms have evolved thermo-mechanically treated steel which has enhanced strength, better corrosion resistance, ductility, weld ability and high temperature thermal resistance. Enquiries from these are made on technical specifications and use of such products considered in works based on performance in works where these have already been used.
- 10.24 In case it is decided to include the following items and their maintenance in the BOQ, the scope and specifications should be worked out and defined in a detailed manner in the tender document to avoid any dispute during execution.

MoRT&H Clause Item

- | | |
|-----|---|
| 120 | Site office and furniture for Engineer and his staff. |
| 122 | Site residential accomodation for Engineer and other supervisory staff. |
| 124 | Providing and maintaining vehicle for the Engineer. |

GENERAL
Notes -Bridge works

The basic approach for the preparation of schedule of rates for Bridge works is indicated as under :

1. **Description of items**

The description of items is given briefly and linked with relevant clause of MoRT&H's Specifications for Road and Bridge Works, which may be referred for detailed description, provisions and interpretation.

2. **Overhead Charges**

The rates include overhead charges considering the following elements -

- i. Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
- ii. Office furniture, equipment and communications.
- iii. Expenditure on
 - a) Corporate office of contractor
 - b) Site Supervision
 - c) Documentation and "as built" drawings
- iv. Mobilisation/de-mobilisation of resources.
- v. Labour camps with minimum amenities and transportation to work sites.
- vi. Light vehicles for site supervision including administrative and managerial
- vii. Laboratory equipment and quality control including field and laboratory testing
- viii. Minor T&P and survey instruments and setting out works, including verification of line, dimensions, trial pits and bore holes, where required
- ix. Watch and ward
- x. Traffic management during construction
- xi. Expenditure on safeguarding environment
- xii. Sundries
- xiii. Financing Expenditure
- xiv. Sales/Turn over tax
- xv. Work Insurance/compensation

3.1 20 percent overhead charges has been considered in the schedule of rates

4. **Contractor Profit**

10 percent of cost of works. Contractor profit is also added on overhead charges.

5. **Basic Inputs**

Basic inputs are only given in the standard data book. The rates for material and labour are as

6. **Plants and Equipment**

The usage/hire charges of machinery/equipment have been worked out based upon present cost of equipments, repairs, POL and Operational charges.

7. Materials

7.1 Quantities of materials considered in the rate are approximate for the purpose of estimating and include normal wastages. Actual consumption would have to be based on mix design.

7.2 Arunachal Pradesh has typical and hard terrain having different altitude, wherein maximum construction material are brought from Assam and utilised in different station located in state. Hence, to maintain the uniformity in rates, it is decided to prepare the APSR-2005 without considering any lead on materials and aggregate. The transportation cost shall be included in the estimate as per distance from the source of procurement of material/aggregate. The following sources has been adopted in the schedule 2005.

- (1) All steel items/Bitumen product - Guwahati
- (2) Cement :- Banderdewa/Bhalukpong/Likabali/Dholla/Margherita
- (3) Bricks :- Klin in Assam nearby to Arunachal Pradesh
- (4) Aggregate :- At quarry nearby site of work.
- (5) Other items :- Avarage market rates fixed for all district headquarter of state.
- (6) R.C.C. Hume Pipes :- Naharlagun/Likabali or nearby source in Assam.

7.3 The alternative proposal for crushing own aggregate by installing crusher is compared with procurement of crushed aggregates from the market and proposal found economical is adopted.

7.4 The specifications of materials shall be governed by section 1000 of MoRT&H Specifications for Road and Bridge Works.

8. Labour

8.1 The avarage market rate has been adopted which are workable in the state

8.2 One mate has been provided for 25 labours

9. Carriage of Materials

9.1 The unit for vehicle for carriage has been taken as under :

- a) In hours where lead is variable. The loading and unloading for such cases have been provided sparetely.
- b) In tonne - km where lead is variable. The loading and unloading for such cases have been provided sparately.
- c) Ziro lead has been considered for the stone aggregate in order to work out the actual rates of aggregates by adding the transportation cost up to the site of work.

10. General :

10.1 The clause numbers refer to MoRT&H Specifications for Road and Bridges Works.

10.2 Assumptions made have been indicated in respective chapter in the form of notes, where required.

10.3 Sundries to cater for unforeseen contincency and miscellaneous items have been added in the overhead charges.

10.4 Arrangement for traffic during construction shall be as per Clause 112 of MoRT&H Specifications for Road and Bridge Works.

- 10.5 Contractor will make his own arrangements for borrowing earth. However, compensation for earth taken from private land has been included in the rate for construction of embankment with borrowed earth.
- 10.6 **Credit for Dismantled Material**
- Credit for dismantled materials has not been included in this schedule of rates. The dismantled materials should be examined and a realistic assessment made for such materials, which can be utilised for works and to be reflected in the estimate.
- 10.7 The source of material and samples are required to be approved by the Engineer before start of any work.
- 10.8 The rates of items include cost of testing of soil, materials and works.
- 10.9 The contractor shall arrange to provide and maintain an adequate equipment field laboratory as per Clause 121.
- 10.10 Quality Control of works shall be governed by Section 900 of MoRT&H Specifications.
- 10.11 The various activities of works shall also be documented by photographs and video cassettes as per Clauses 125 & 126 of MoRT&H Specifications.
- 10.12 The classification of soil shall be as per Clause 301.2 of MoRT&H Specifications.
- 10.13 The earth excavated from foundations has been considered to be backfilled and balance utilised locally for road work except in the case of marshy soil.
- 10.14 The rate for removal of unsuitable soil does not provide for replacement by suitable soil which will have to be paid separately.
- 10.15 The hire charge rates for machinery and equipment are taken from the Standard Data Book and prevailing market rate.
- 10.16 10 per cent extra cement has been provided for concreting under water, where required.
- 10.17 Grade of cement may be adopted as per mix design.
- 10.18 Quantities of cement in various grades of cement concrete have been taken as per IRC:21-2000 and IRC:18-2000.
- 10.19 The coarse and fine aggregates shall conform to IS:383.
- 10.20 Some of major steel producing firms have evolved thermo-mechanically treated steel which has enhanced strength, better corrosion resistance, ductility, weld ability and high temperature thermal resistance. Enquiries from these are made on technical specifications and use of such products considered in works based on performance in works where these have already been used.
- 10.21 In case it is decided to include the following items and their maintenance in the BOQ, the scope and specifications should be worked out and defined in a detailed manner in the tender document to avoid any dispute during execution.
11. **Guide Bund**
- 11.1 The item for the guide bund are excavation, embankment and protection works.
- 11.2 In case bridge construction works are to be done on wide and deep water channels in major rivers provision of floating barrages etc. for taking the construction materials and equipments inside water shall be made separately.

- 11.3 The item for sinking of wells cover diameters from 6 m to 12 and Twin D Type and size 12 m x 6 m. For other shapes like rectangular or any other size, the rates of sinking may be worked out on pro-rata basis.
- 11.4 The lift for casting of concrete in well steining may be 2 to 2.5 m restricting the free fall of concrete to 1.5 m and concreting layer to 450 mm.

MoRT&H Clause Item

- 120 Site office and furniture for Engineer and his staff.
- 122 Site residential accomodation for Engineer and other supervisory staff.
- 124 Providing and maintaining vehicle for the Engineer.

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-1		
	CARRIAGE OF MATERIALS		
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	135.00
1.2	Loading and Unloading of Boulders by Manual Means	cum	149.00
1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking.	tonne	182.00
1.4	Cost of Haulage Excluding Loading and Unloading		
(i)	Surfaced Road	tonne.km	5.10
(ii)	Unsurfaced Gravelled Road	tonne.km	6.10
(iii)	Katcha Track and Track in river bed / nallah bed and choe bed.	tonne.km	12.30

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-2		
	SITE CLEARANCE		
2.1	Cutting of Trees, including Cutting of Trunks, Branches and Removal (Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 mtrs and earth filling in the depression/pit.)		
(i)	Girth from 300 mm to 600 mm	each	240.00
(ii)	Girth from 600 mm to 900 mm	each	442.00
(iii)	Girth from 900 mm to 1800 mm	each	841.00
2.2	Clearing Grass and Removal of Rubbish	hectare	15851.00
2.3	Clearing and Grubbing Road Land . (Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.)		
(i)	By Manual Means:-		
A	In area of light jungle	hectare	48070.00
B	In area of thorny jungle	hectare	64437.00
(ii)	By Mechanical Means		
A	In area of light jungle	hectare	45526.00
B	In area of thorny jungle	hectare	55167.00
2.4	Dismantling of Structures (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres)		
(i)	Lime /Cement Concrete		
I	By Manual Means		
A	Lime Concrete, cement concrete grade M-10 and below	cum	365.00
B	Cement Concrete Grade M-15 & M-20	cum	429.00
C	Prestressed / Reinforced cement concrete grade M-20 & above	cum	1099.00
II	By Mechanical Means for items No. 202(b) & (c)		
A	Cement Concrete Grade M-15 & M-20	cum	585.00
B	Prestressed / Reinforced cement concrete grade M-20 & above	cum	975.00
(ii)	Dismantling Brick / Tile work		
A	In lime mortar	cum	238.00
B	In cement mortar	cum	302.00
C	In mud mortar	cum	213.00
D	Dry brick pitching or brick soling	cum	200.00
(iii)	Dismantling Stone Masonry		
A	Rubble stone masonry in lime mortar	cum	264.00
B	Rubble stone masonry in cement mortar.	cum	302.00
C	Rubble Stone Masonry in mud mortar.	cum	238.00
D	Dry rubble masonry	cum	226.00
E	Dismantling stone pitching/ dry stone spalls.	cum	213.00
F	Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.	cum	238.00
(iv)	Wood work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level	cum	565.00
(v)	Steel work in all types of sections upto a height of 5 m above plinth level excluding cutting of rivet.		
A	Including dismembering	tonne	1411.00
B	Excluding dismembering.	tonne	1038.00
C	Extra over item No(V) A and(V) B for cutting rivets.	tonne	11.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(vi)	Scraping of bricks dismantled from brick work including stacking.		
A	In lime/Cement mortar	1000 numbers	1110.00
B	In mud mortar	1000 numbers	396.00
(vii)	Scraping of Stone from dismantled stone masonry		
A	In cement and lime mortar	cum	445.00
B	In Mud mortar	cum	94.00
(viii)	Scarping plaster in lime or cement mortar from brick/ stone masonry	sqm	14.00
(ix)	Removing all type of hume pipes and stacking within a lead of 1000 metres including earthwork and dismantling of masonry works.		
A	Up to 600 mm dia	metre	165.00
B	Above 600 mm to 900 mm dia	metre	223.00
C	Above 900 mm	metre	381.00
2.5	Dismantling of Flexible Pavements (Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately)		
I	By Manual Means		
A	Bituminous courses	cum	672.00
B	Granular courses	cum	488.00
II	By Mechanical Means		
A	Bituminous course	cum	298.00
2.6	Dismantling of Cement Concrete Pavement (Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately)	cum	1292.00
2.7	Dismantling Guard Rails (Dismantling guard rails by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable materials and unserviceable materials separately.)	metre	73.00
2.8	Dismantling Kerb Stone (Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre)	metre	15.00
2.9	Dismantling Kerb Stone channel (Dismantling kerb stone channel by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre)	metre	23.00
2.10	Dismantling Kilometre Stone (Dismantling of kilometre stone including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and back filling of pit.)		
A	5th KM stone	each	352.00
B	Ordinary KM Stone	each	210.00
C	Hectometre Stone	each	42.00
2.11	Dismantling of Fencing (Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable material and unserviceable material separately.)	metre	47.00
2.12	Dismantling of CI Water Pipe Line (Dismantling of CI water pipe line 600 mm dia including disposal with all lifts and lead upto 1000 metres and stacking of serviceable material and unserviceable material separately under supervision of concerned department)	metre	114.00
2.13	Removal of Cement Concrete Pipe of Sewer Gutter (Removal of cement concrete pipe of sewer gutter 1500 mm dia under the supervision of concerned department including disposal with all lifts and up to a lead of 1000 metres and stacking of serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works.)	metre	162.00
2.14	Removal of Telephone / Electric Poles and Lines (Removal of telephone / Electric poles including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and up to a lead of 1000 metres and stacking the serviceable and unserviceable material separately)	each	165.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-3		
	EARTH WORK, EROSION CONTROL AND DRAINAGE		
3.1	Excavation in Soil by Manual Means. (Excavation for roadway in soil using manual means including loading in truck for carrying of cut earth to embankment site with all lifts and lead upto 1000 metres.)	cum	168.00
3.2	Excavation in ordinary rock by manual means (Excavation in ordinary rock using manual means including loading in a truck and carrying of excavated material to embankment site with in all lifts and leads upto 1000 metres)	cum	234.00
3.3	Excavation in Soil with Dozer with lead upto 100 metres (Excavation for road way in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 metres (average lead 50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	149.00
3.4	Excavation in Ordinary Rock with Dozer with lead upto 100 metres (Excavation for roadway in ordinary rock by deploying a dozer, 80 HP including cutting and pushing the cut earth to site of embankment upto a distance of 100 metres (average lead 50 metres), trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.)	cum	252.00
3.5	Excavation in Hard Rock (requiring blasting) with disposal upto 1000 metres (Excavation for roadway in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres)	cum	213.00
3.6	Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with disposal upto 1000 metres. (Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m)	cum	66.00
3.7	Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with disposal upto 1000 metres. (Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site within all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	84.00
3.8	Excavation in Hard Rock (blasting prohibited) (Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)		
A	Mechanised	cum	398.00
B	Manual Method	cum	908.00
3.9	Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres (Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres)	cum	271.00
3.10	Excavation in Marshy Soil (Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 metres, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	74.00
3.11	Removal of Unserviceable Soil with Disposal upto 1000 metres (Removal of unserviceable soil including excavation, loading and disposal upto 1000 metres lead but excluding replacement by suitable soil which shall be paid separately as per clause 305.)	cum	67.00
3.12	Pre-splitting of Rock Excavation Slopes (Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and spaced drill holes, collection of the excavated rock by a 80 HP dozer, loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No. 303)	sqm	149.00
3.13	Excavation for Structures (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.)		

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(i)	Ordinary soil		
A	Manual Means (Depth upto 3 m)	cum	254.00
B	Mechanical Means (Depth upto 3 m)	cum	46.00
(ii)	Ordinary rock (not requiring blasting)		
A	Manual Means (Depth upto 3 m)	cum	317.00
B	Mechanical Means	cum	62.00
(iii)	Hard rock (requiring blasting)		
A	Manual Means	cum	548.00
(iv)	Hard rock (blasting prohibited)		
A	Mechanical Means	cum	783.00
(v)	Marshy soil		
A	Manual means (upto 3 m depth)	cum	564.00
B	Mechanical Means	cum	238.00
3.14	Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.)	sqm	24.00
3.15	Scarifying existing bituminous surface to a depth of 50 mm by mechanical means (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres.)	sqm	6.00
3.16	Embankment Construction with Material Obtained from Borrow Pits (Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2)	cum	291.00
3.17	Construction of Embankment with Material Deposited from Roadway Cutting (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)	cum	104.00
3.18	Construction of Subgrade and Earthen Shoulders (Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2)	cum	339.00
3.19	Compacting Original Ground		
Case-I	Compacting original ground supporting subgrade (Loosening of the ground upto a level of 500 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of table 300-2 for subgrade construction.)	cum	57.00
Case-II	:Compacting original ground supporting embankment	cum	22.00
3.20	Stripping and Storing Top Soil (Stripping, storing of top soil by road side at 15 m interval and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth)	cum	202.00
3.21	Stripping, storing and re-laying top soil from borrow areas in agriculture fields. (Stripping of top soil from borrow areas located in agriculture fields, storing at a suitable place, spreading and re-laying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels and satisfaction of the farmer.)	cum	90.00
3.22	Turfing with Sods (Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of rods and watering)	sqm	35.00
3.23	Seeding and Mulching (Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of 0.23 litres per sqm and laying and fixing jute netting, including watering for 3 months all as per clause 308)	sqm	112.00
3.24	Surface Drains in Soil (Construction of unlined surface drains of average cross sectional area 0.40 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of 50 metres (average lead 25 metres))		
A	Mechanical means	metre	71.00
B	Manual Means	metre	63.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
3.25	Surface Drains in Ordinary Rock (Construction of unlined surface drain of average cross sectional area 0.4 sqm in ordinary rock to specified lines, grades, levels and dimensions as per approved design and to the requirement of clause 301 to 309. Excavated material to be used in embankment at site.)		
A	Mechanical Means	metre	143.00
B	Manual Means	metre	95.00
3.26	Surface Drains in Hard Rock (Rate per metre may be worked out based on quantity of hard rock as per design.)	metre	
3.27	Sub Surface Drains with Perforated Pipe (Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ cement concrete/PVC, closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site)		499.00
3.28	Aggregate Sub- Surface Drains (Construction of aggregate sub surface drain 300 mm x 450 mm with aggregates conforming to table 300-4, excavated material to be utilised in roadway)	metre	234.00
3.29	Underground Drain at Edge of Pavement (Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab 10 cm in thickness on urban roads)	metre	3446.00
3.30	Preparation and Surface Treatment of formation. (Preparation and surface treatment of formation by removing mud and slurry, watering to the extent needed to maintain the desired moisture content, trimming to the required line, grade, profile and rolling with 8-10 tonne smooth wheeled roller, complete as per clause 310.)	sqm	2.00
3.31	Construction of Rock fill Embankment (Construction of rock fill embankment with broken hard rock fragments of size not exceeding 300 mm laid in layers not exceeding 500 mm thick including filling of surface voids with stone spalls, blinding top layer with granular material, rolled with vibratory road roller, all complete as per clause 313)	cum	55.00
3.32 (i)	Excavation in Hill Area in Soil by Mechanical Means (Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres)	cum	150.00
3.32 (ii)	Depositing of excavated earth on the barren valley side. (Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth on the Barren Valley side)	cum	81.00
3.33 (i)	Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting. (Excavation in hilly area in ordinary rock not requiring ballasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres)	cum	220.00
3.33 (ii)	Disposal of excavated earth on the barren valley side. (Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of excavated earth on the barren valley side)	cum	127.00
3.34	Excavation in Hilly Areas in Hard Rock Requiring Blasting (Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.)	cum	294.00
3.35 (i) A	Excavation in Hilly Areas in Soil by Manual Means (Excavation in soil in Hilly Area by Manual Means including cutting and trimming of side slopes and disposing of excavated earth with a lift upto 1.5 m and a lead upto 20 m as per drawing and Technical Specification Clause 1603.1)	cum	159.00
3.35 (i) B	Deduct for quantum of earthwork of all types disposal directly by throwing into the valley without involving any lead and lift (Ordinary and Hard Soil/Hard Shale, Soil containing shingle or small size boulders.	cum	60.00
3.35 (ii) A	Excavation in Hilly Area in Ordinary Rock by Manual Means (Excavation in Ordinary Rock using Manual Means including loading in a truck and carrying of excavated material to embankment site with a lift upto 1.5 m and lead upto 20 m as per Clause 1603.2.)	cum	349.00
3.35 (ii) B	Deduct for quantum of earthwork of all types disposal directly by throwing into the valley without involving any lead and lift. (Ordinary and Hard Rock)	cum	96.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-4		
	SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS		
4.1	Granular Sub-base with Close Graded Material (Table:- 400-1)		
A	Plant Mix Method (Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401)		
(i)	for grading- I Material	cum	1345.00
(ii)	for grading- II Material	cum	1216.00
(iii)	for grading-III Material	cum	1201.00
B	By Mix in Place Method (Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)		
(i)	for grading- I Material	cum	1200.00
(ii)	for grading- II Material	cum	1071.00
(iii)	for grading-III Material	cum	1056.00
4.2	Granular Sub-Base with Coarse Graded Material (Table:- 400- 2) (Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)		
(i)	for grading- I Material	cum	1223.00
(ii)	for grading- II Material	cum	1131.00
(iii)	for grading-III Material	cum	1061.00
4.3	Lime Stabilisation for Improving Subgrade (Laying and spreading available soil in the subgrade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 3 % slaked lime having minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade)		
A	By Mechanical Means	cum	877.00
B	By Manual Means	cum	877.00
4.4	Lime Treated Soil for Sub- Base (Providing, laying and spreading soil on a prepared sub grade, pulverising, mixing the spread soil in place with rotavator with 3 % slaked lime with minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98% of the max dry density to form a layer of sub base.)	cum	1091.00
4.5	Cement Treated Soil Sub Base/ Base (Providing, laying and spreading soil on a prepared sub grade, pulverising, adding the designed quantity of cement to the spread soil, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base.)	cum	1045.00
4.8	Inverted Choke (Construction of inverted choke by providing, laying, spreading and compacting screening B type/ coarse sand of specified grade in uniform layer on a prepared surface with motor grader and compacting with power roller etc)	cum	867.00
4.9	Water Bound Macadam (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.)		

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
A	By Manual Means		
(i)	Grading- I (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel	cum	1540.00
(b)	Using Screening Type-A (13.2mm Agg.)	cum	2029.11
(ii)	Grading- II (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel	cum	1570.00
(b)	Using Screening Type-A (13.2mm Agg.)	cum	1835.00
(c)	Using Screening Type-B (11.2mm Agg.)	cum	2014.00
(iii)	Grading- III (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel	cum	1603.00
(b)	Using Screening Type-B (11.2mm Agg.)	cum	2046.00
B	By Mechanical Means:		
(i)	Grading- I (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel	cum	1397.00
(b)	Using Screening Type-A (13.2mm Agg.)	cum	1885.50
(ii)	Grading- II (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel	cum	1427.00
(b)	Using Screening Type-A (13.2mm Agg.)	cum	1691.00
(c)	Using Screening Type-B (11.2mm Agg.)	cum	1871.00
(iii)	Grading- III (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel	cum	1459.00
(b)	Using Screening Type-B (11.2mm Agg.)	cum	1903.00
4.10	Crushed Cement Concrete Sub-base / Base (Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L km., laying and compacting the same as sub base/ base course, constructed as WBM to clause 404 except the use of screening or binding Material.)	cum	218.00
4.11	Penetration Coat Over Top Layer of Crushed Cement Concrete Base (Spraying of bitumen over cleaned dry surface of crushed cement concrete base at the rate of 25 kg per 10 sqm by a bitumen pressure distributor, spreading of key aggregates at the rate of 0.13 cum per 10 sqm by a mechanical gritter and rolling the surface as per clause 506.3.8)	sqm	36.00
4.12	Wet Mix Macadam (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)	cum	1451.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
4.13	Construction of Median and Island with Soil Taken from Roadway Cutting (Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause 407)	cum	244.00
4.14	Construction of Median and Island with Soil Taken from Borrow Areas (Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 407)	cum	499.00
4.15	Construction of Shoulders (A. Earthen Shoulders)		
4.17	Crusher Run Macadam Base (Providing crushed stone aggregate, depositing on a prepared surface by hauling vehicles, spreading and mixing with a motor grader, watering and compacting with a vibratory roller to clause 410 to form a layer of sub-base/Base)		
A	By Mix in Place Method		
(i)	For 53 mm maximum size	cum	2147.00
(ii)	For 45 mm maximum size	cum	2445.00
B	By Mixing Plant :		
(i)	For 53 mm maximum size	cum	2286.00
(ii)	For 45 mm maximum size	cum	1619.00
4.18 (A)	Preparation of sub grade (Preparation of sub grade by excavating earth to an average depth of 22.50 cm, dressing to camber and consolidating with road roller, making good the undulations etc. and disposal of surplus earth, lead upto 50 m.)	sqm	65.00
4.18 (B)	Consolidation of sub-grade with road roller of 8 to 12 tonne capacity including making good the undulations etc. with earth or quarry spoils etc. and rerolling the sub grade.	sqm	3.59

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-5		
	BASES AND SURFACE COURSES (BITUMINOUS)		
5.1	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	31.00
5.2	Tack coat		
	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	11.00
5.3	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction)		
(i)	for Grading I (40 mm nominal size)	cum	7897.00
(ii)	for Grading II (19 mm nominal size)	cum	8153.00
5.4	Bituminous Penetration Macadam (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction)		
A	50 mm thick	sqm	368.00
B	75 mm thick	sqm	501.00
5.5	Built-Up-Spray Grout (Providing, laying and rolling of built-up-spray grout layer over prepared base consisting of a two layer composite construction of compacted crushed coarse aggregates using motor grader for aggregates. key stone chips spreader may be used with application of bituminous binder after each layer, and with key aggregates placed on top of the second layer to serve as a Base conforming to the line, grades and cross-section specified, the compacted layer thickness being 75 mm)	sqm	292.00
5.6	Dense Graded Bituminous Macadam (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.)		
(i)	for Grading I (40 mm nominal size)	cum	9927.00
(ii)	for GradingII(19 mm nominal size)	cum	10167.00
5.7	Semi - Dense Bituminous Concrete (Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects)		
(i)	for Grading I (13 mm nominal size)	cum	10566.00
(ii)	for GradingII(10 mm nominal size)	cum	11376.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
5.8	Bituminous Concrete (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects)		
(i)	for Grading-I (13 mm nominal size)	cum	11395.00
(ii)	for Grading-II(10 mm nominal size)	cum	11387.00
5.9	Surface Dressing (Providing and laying surface dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller)		
Case -I	19 mm nominal chipping size	sqm	106.00
Case - II	13 mm nominal size chipping	sqm	86.00
5.10	Open - Graded Premix Surfacing (Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or cut-back or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades.)		
(i)	Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .	sqm	159.00
(ii)	Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion	sqm	166.00
5.11	Close Graded Premix Surfacing/Mixed Seal Surfacing (Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour. Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-a) or 13.2 mm to 0.09 mm (Type-b) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.)	sqm	183.00
5.12	Seal Coat (Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats)		
(i)	Case - I : Type A	sqm	82.00
(ii)	Case - II : Type B (Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen of suitable grade.)	sqm	60.00
5.13	Supply of Stone Aggregates for Pavement Courses (Supply of stone aggregates from approved sources conforming to the physical requirement, specified in the respective specified clauses, including royalties, fees rents, collection, transportation, stacking and testing and measured in cum as per clause 514.5 Competitive market rates to be ascertained. Alternatively, rates for stone crushing given in chapter 1 may be adopted, if found economical. In case for supply of aggregates at site are not available, nearest crusher site may be ascertained. Loading and un-loading charges and cost of carriage may be added to these rates to arrive at the cost at site.)	cum	
5.14	Mastic Asphalt (Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine-grained hard stone chipping of 13.2 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 1000C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm	706.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
5.15	Slurry Seal Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface)		
(i)	5 mm thickness	sqm	76.00
(ii)	3 mm thickness	sqm	47.00
(iii)	1.5 mm thickness	sqm	29.00
5.17	Fog Spray	sqm	37.00
added	1.In case it is decided by the engineer to blind the fog spray, the following may be added	sqm	5.00
5.18	Bituminous Cold Mix (Including Gravel Emulsion) (Providing, laying and rolling of bituminous cold mix on prepared base consisting of a mixture of unheated mineral aggregate and emulsified or cutback bitumen, including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing to specified grades and levels.)		
(i)	Using bitumen emulsion and 9.5 mm or 13.2 mm nominal size aggregate	cum	11875.00
(ii)	Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate	cum	11526.00
(iii)	Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate	cum	10504.00
(iv)	Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate	cum	10156.00
5.19	Sand Asphalt Base Course (Providing, laying and rolling sand-asphalt base course composed of sand, mineral filler and bituminous binder on a prepared sub-grade or sub-base to the lines, levels, grades and cross sections as per the drawings including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing.)	cum	8824.00
5.20	Modified Binder (Supply of modified binder produced by mixing bitumen with modifier such as natural rubber or crumb rubber or any other polymer found compatible with bitumen and which allows properties given in clause 521.3 and IRC: SP: 53 blending of modifier with bitumen to be done either at the refinery or at the site plant capable of producing the modified binder to be delivered in drums which shall be agitated in melted condition using suitable device before use to ensure uniform dispersion.)	tonne	
5.21	Crack Prevention Courses		
(i)	Stress Absorbing Membrane (SAM) crack width less than 6 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width below 6 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 9 kg per 10 sqm and spreading 5.6 mm crushed stone aggregates @ 0.11 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	sqm	73.00
(ii)	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	sqm	84.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(iii)	Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 % (Providing and laying a single coat of a stress absorbing membrane over a cracked road surface, with crack width above 9 mm and cracked area above 50 % after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	sqm	110.00
5.22	Recipe Cold Mix (Providing and laying of premix of crushed stone aggregates and emulsion binder, mixed in a batch type cold mixing plant, laid over prepared surface, by paver finisher, rolled with a pneumatic tyred roller initially and finished with a smooth steel wheel roller, all as per clause 519.3)		
(i)	75 mm thickness	cum	7842.00
(ii)	40 mm thickness	cum	11159.00
(iii)	25 mm thickness	cum	12629.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-6		
	CEMENT CONCRETE PAVEMENTS		
6.1	Dry Lean Cement Concrete Sub- base (Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.)	cum	3741.00
6.2	Cement Concrete Pavement (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	7482.00
6.3	Rolled Cement Concrete Base (Construction of rolled cement concrete base course with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm with minimum, aggregate cement ratio 15:1 and minimum cement content of 200 kg/cum, aggregate gradation to be as per table 600-4 after blending, mixing in batching plant at optimum moisture content, transporting to site, laying with a paver with electronic sensor, compacting with 8-10 tonnes smooth wheeled vibratory roller to achieve, the designed flexural strength, finishing and curing.)	cum	4234.00
6.4	Transition section between rigid and flexible pavement (Due to change in the properties of materials and type of construction, a gradual changeover from rigid pavement to flexible pavement is desirable to avoid any damage at the butting joint. After provision of an expansion joint in the cement concrete slab, the thickness of slab should be tapered to 10 cm over a length of 3 m towards the flexible pavement. The deficiency of thickness caused due to tapering of the slab should be made up by the asphaltic layers.)		

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-8		
	TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES		
8.1	Cast in Situ Cement Concrete M20 kerb (Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408)		
A	Using Concrete Mixer	metre	340.00
B	Using Concrete Batching and Mixing Plant	metre	340.00
8.2	Cast in Situ Cement Concrete M 20 Kerb with Channel (Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408)		
A	Using Concrete Mixer	metre	636.00
B	Using Concrete Batching and Mixing Plant	metre	640.00
8.3	Printing new letter and figures of any shade (Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade)		
(i)	Hindi (Matras commas and the like not to be measured and paid for Half letter shall be counted as half)	cm height per letter	0.90
(ii)	English and Roman	cm height per letter	0.60
8.5	Direction and Place Identification signs upto 0.9 sqm size board. (Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing)	sqm	2624.00
8.6	Direction and Place Identification signs with size more than 0.9 sqm size board. (Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing)	sqm	5130.00
8.8	Painting Two Coats on New Concrete Surfaces (Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces)	sqm	68.00
8.9	Painting on Steel Surfaces (Providing and applying two coats of ready mix paint of approved brand on steel surface after through cleaning of surface to give an even shade)	sqm	64.00
8.10	Painting on Wood Surfaces (Providing and applying two coats of ready mix paint of approved brand on wood surface after through cleaning of surface to give an even shade)	sqm	71.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
8.11	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work (Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control)		
(i)	Over 10 cm in width	sqm	108.00
(ii)	Up to 10 cm in width	sqm	92.00
8.12	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work (Painting lines, dashes, arrows etc on roads in two coats on old work with ready mixed road marking paint conforming to IS: 164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control)		
(i)	Over 10 cm in width	sqm	74.00
(ii)	Up to 10 cm in width	sqm	79.00
8.13	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface (Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.)	sqm	607.00
8.14	Kilo Metre Stone (Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc)		
(i)	5th kilometre stone (precast)	each	3921.00
(ii)	Ordinary Kilometer stone (Precast)	each	2383.00
(iii)	Hectometer stone (Precast)	each	662.00
8.16	Boundary pillar (Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting)	each	551.00
8.17	G.I Barbed wire Fencing 1.2 metre high (Providing and fixing 1.2 metres high GI barbed wire fencing with 1.8 m angle iron posts 40 mm x 40 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be struttred on both sides and end post on one side only and provided with 9 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807)	metre	335.00
8.18	G.I Barbed wire Fencing 1.8 metre high (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be struttred on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807)	metre	548.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
8.19	Fencing with welded steel wire Fabric 75 mm x 50 mm (Suggestive) (Providing 1.20 metre high fencing with angle iron posts 50 mm x 50 mm x 6 mm at 3 metre center to center with 0.40 metre embedded in M15 grade cement concrete, corner, end and every 10th post to be struttred, provided with welded steel wire fabric of 75 mm x 50 mm mesh or 75 mm x 25 mm mesh and fixed to iron posts by flat iron 50 x 5 mm and bolts etc. complete in all respects.)	metre	628.00
8.20	Tubular Steel Railing on Medium Weight steel channel (ISMC series) 100 mm x 50 mm (Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 metres high above ground, 2 m centre to centre, complete as per approved drawings)	metre	2679.00
8.21	Tubular Steel Railing on Precast RCC posts, 1.2 m high above ground level (Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts 1.8 metres high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing)	metre	2129.00
8.22	Reinforced Cement Concrete Crash Barrier (Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified)		
(i)	M 20 grade concrete	metre	4189.00
8.23	Metal Beam Crash Barrier		
A	Type - A, "W" : Metal Beam Crash Barrier (Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 810)	metre	3617.00
B	Type - B, "THRIE" : Metal Beam Crash Barrier (Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 2 m high with 1.15 m below ground level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a space of channel section 150 x 75 x 5 mm, 546 mm long complete as per clause 810)	metre	4634.00
8.24	Road Traffic Signals electrically operated (Since it is a ready made item commercially produced and erected by specialised firm in the electrical and electronic field, rate may be taken based on market enquiry from firms specialised in this field and ISI certified for the approved design and drawing.)		
8.25	Flexible Crash Barrier, Wire Rope Safety Barrier (Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (ISMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M 15 grade cement concrete 450 x 450 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M 15 grade cement concrete foundation 2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 450 inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement concrete.)	metre	3424.00
8.27	Street Lighting (Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 9 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with sodium vapour lamp and fixed firmly in concrete foundation.)		
(i)	For Fixing in Median	each	14470.00
(ii)	For fixing in Footpath	each	14401.00
8.28	Lighting on Bridges (Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp)	each	9333.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
8.29	Cable Duct Across the Road (Providing and laying of a reinforced cement concrete pipe duct, 300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills, constructing head walls at both ends, providing a minimum fill of granular material over top and sides of RCC pipe as per IRC:98-1997, bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 - 1997 and approved drawings.)		
(i)	Single Row for one utility service	metre	1202.00
(ii)	Double Row for two utility services	metre	2163.00
(iii)	Triple Row for three utility services	metre	3144.00
8.35	Road Markers/Road Stud with Lense Reflector (Providing and fixing of road stud 100x 100 mm, die cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973)	each	651.00
8.36	Traffic Cone (Provision of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS 873)	each	1600.00
8.38	Rumble Strips (Provision of 15 nos rumble strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking paint.)	sqm	
8.40	High Mast Pole Lighting at Interchanges and Flyovers (Providing and erecting a high mast pole lighting with 30 m high hot dip galvanised mast designed to withstand forces exerted with wind speeds of 180 km per hour with 3 seconds gust, as per IS:875 (Part 3) - 1978, fitted with a base flange, door at the base of mast with heavy duty internal lock, lantern carriage, suitable winching arrangement for safe working load of 750 kg and high powered electrically driven power tools for raising and lowering of lantern carriage, flexible 8 core electric cable, lightening conductor, earthing terminal, and fixing 2 nos aviation obstruction lights on top of the mast, all complete as per approved design and drawings This is a specialised work and is generally done by firms who specialise in such jobs. The detailed designs and estimates are submitted by the firms alongwith their tender for checks by the Department. The cost of this work is required to be worked out based on approved design, drawings and estimate of the lowest tender. A separate contract for this work is concluded as the contractors for road and bridge works generally donot undertake such jobs.)		
8.43	Portable Barricade in Construction Zone (Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 450, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001)	each	3390.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
8.44	Permanent Type Barricade in Construction Zone		
A	With Steel Components (Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of 45°, complete as per IRC:SP:55-2001)	each	5374.00
B	With Wooden Components (Construction of a permanent type barricade made of wooden components, 1.5 m high from road level, fitted with 3 horizontal planks 200 mm wide and 3.66 m long on 100 x 100 mm wooden vertical post, painted with yellow and white strips, 150 mm in width at an angle of 45°, complete as per IRC:SP:55-2001)	each	4077.00
C	With Bricks (Construction of a permanent type barricade made with brick work in mud mortar, 1.5 m high, 4 m long, 600 mm thick, plastered with cement mortar 1:6, painted with yellow and white strips)	each	22623.00
8.45	Drum Delineator in Construction Zone (Provision of metal drum/empty bitumen drum delineator, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferential strips of alternate black and white 100 mm wide fitted with reflectors 3 Nos of 7.5 cm dia, all as per IRC:SP:55-2001)	each	396.00
8.46	Flagman (Positioning of a smart flagman with a yellow vest and a yellow cap and a red flag 600 x 600 mm securely fastened to a staff 1 m in length for guiding the traffic)	each	462.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-9		
	PIPE CULVERTS		
9.1	PCC 1:3:6 in Foundation (Plain cement concrete 1:3:6 mix with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.)	cum	4723.00
9.2	Laying Reinforced Cement Concrete Pipe NP2/prestrssed concrete pipe on first class bedding in single row . (Laying Reinforced cement concrete pipe NP2/prestrssed concrete pipe for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)		
A	1000 mm dia	metre	1365.00
B	1200 mm dia	metre	1838.00
9.3	Laying Reinforced Cement Concrete Pipe NP 2 /prestrssed concrete pipe on first class bedding in double row . (Laying Reinforced cement concrete pipe NP2 /prestrssed concrete pipe for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)		
A	1000 mm dia	metre	2862.00
B	1200 mm dia	metre	3818.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-10		
	MAINTENANCE OF ROADS		
10.1	Restoration of Rain Cuts (Restoration of rain cuts with soil, moorum, gravel or a mixture of these, clearing the loose soil, benching for 300 mm width, laying fresh material in layers not exceeding 250 mm and compacting with plate compactor or power rammers to restore the original alignment, levels and slopes)	cum	221.00
10.2	Maintenance of Earthen Shoulder (filling with fresh soil) (Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.)	sqm	86.00
10.3	Maintenance of Earth Shoulder (stripping excess soil) (Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor)	sqm	23.00
10.4	Filling Pot- holes and Patch Repairs with open - graded Premix surfacing, 20mm. (Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2)	sqm	179.00
10.5	Filling Pot- holes and Patch Repairs with - Bituminous concrete, 40mm. (Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2)		
(i)	for grading I Material	sqm	401.00
(ii)	for grading II Material	sqm	426.00
10.6	Crack Filling (Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.)	metre	4.00
10.7	Dusting (Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.)	sqm	1.39
10.8 A	Fog Seal (ref item 5.17)	sqm	0.00
B	Crack Prevention courses. (ref item 5.21)		
(i)	Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm	
(ii)	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm	
(iii)	Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %	sqm	
(iv)	Bitumen Impregnated Geotextile	sqm	
C	Slurry Seal (ref item 5.15)		
(i)	5 mm thickness	sqm	
(ii)	3 mm thickness	sqm	
(iii)	1.5 mm thickness	sqm	
D	Surface Dressing for maintance works. (ref item 5.9)		
(i)	19 mm nominal chipping size	sqm	
(ii)	13 mm nominal size chipping	sqm	
	The above mentioned items have already been included in Chapter 5.		
10.9	Repair of joint Grooves with Epoxy Mortar Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete)	metre	341.00
10.10	Repair of old Joints Sealant (Removal of existing sealant and re sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material)	metre	61.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
10.11	Hill Side Drain Clearance (Removal of earth from the choked hill side drain and disposing it on the valley side manually)	metre	33.00
10.12	Land Slide Clearance in soil		
(i)	Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side	cum	76.00
(ii)	Clearance of land slides in soil and ordinary rock by a bull-dozer D 50 A-15 and disposal of the same on the valley side	cum	56.00
10.13	Land slide Clearance in Hard Rock Requiring Blasting (Clearing of land slide in hard rock requiring blasting for 50% of the boulders and disposal of the same on the valley side with Bulldozer D 50)	cum	116.00
10.14	Snow Clearance on Roads with Dozer (Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side)	cum	4.00
10.15	Maintenance of WBM Road (Maintenance of WBM road including filling up of pot holes, ruts and rectifying corrugated surface, damaged edges and ravelling as per technical specification clause 1906).	sqm	110.00
10.16	Maintenance of Hume Pipe (Maintenance of Hume Pipe Culvert by way of Cleaning, Clearing, Erosion repair, repairs to cracks, parapet wall and protection work as per drawing and technical specification Clause 1908)	each	1089.00
10.17	Maintenance of Culverts Slab type (Maintenance of Slab type Culvert by way of Cleaning, Clearing, Erosion repair, repairs to cracks, parapet wall and protection work as per drawing and technical specification Clause 1908).	each	2251.00
10.18	Maintenance of Causeway (Maintenance of Causeway by way of minor Surface repairs, replacing Guide Posts, repair of flood gauges, removal of debris, providing boulders and protection work and painting as per technical specifications Clause 1909).	metre	63.00
10.19	Maintenance of Road signs (Maintenance of Road signs by way of cleaning and repainting of mandatory/regulatory/cautionary/informatory and place identifications sign board as per drawings and technical specifications Clause 1910).	km	1061.00
10.20	Cutting of branches of trees shrubs and trimming of grass and weeds		
(i)	Cutting of branches of trees and shrubs from the road way or with in R.O.W. including disposal of wood and leaves to suitable location as per technical specification Clause 1914.	per tree	113.00
(ii)	Cutting of shrubs from the road way or with in R.O.W. and disposal of shrubs to suitable location as per technical specification Clause 1914.	per shrub	6.00
(iii)	Triming of grass and weeds from the shoulders/berms and disposing off the same to suitable locations as per technical specifications Clause 1914.	sqm	2.00
10.21	White washing of parapet walls of CD work and tree trunks (White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning scraping etc. as per technical specifications Clause 1915)	sqm	19.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-11		
	HORTICULTURE		
11.1	Spreading of Sludge Farm Yard Manure or/and good Earth (Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm- yard manure or/and good earth to be paid for separately))	cum	21.00
11.2	Grassing with 'Doobs' Grass (Grassing with 'Doobs' grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for moving including supplying good earth if needed)		
(i)	In rows 15 cm apart in either direction	sqm	25.00
(ii)	In rows 7.5 cm apart in either direction	sqm	43.00
11.3	Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod (Making lawns including ploughing and breaking of clod, removal of rubbish, dressing and supplying doobs grass roots and planting at 15 cm apart, including supplying and spreading of farm yard manure at rate of 0.18 cum per 100 sqm)	sqm	25.00
11.4	Maintenance of Lawns or Turfing of Slopes (Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc)	sqm	190.00
11.5	Turfing Lawns with Fine Grassing including Ploughing, Dressing (Turfing lawns with fine grassing including ploughing, dressing including breaking of clods, removal of rubbish, dressing and supplying doobs grass roots at 10 cm apart, including supplying and spreading of farm yard manure at rate of 0.6 cum per 100 sqm)	sqm	29.00
11.6	Maintenance of Lawns with Fine Grassing for the First Year	sqm	198.00
11.7	a) Planting Permanent Hedges including Digging of Trenches (Planting permanent hedges including digging of trenches, 60 cm wide and 45 cm deep, refilling the excavated earth mixed with farmyard manure, supplied at the rate of 4.65 cum per 100 metres and supplying and planting hedge plants at 30 cm apart)	metre	124.00
(b)	Maintenance of Hedge for one year	metre	164.00
11.8	a) Planting Flowering Plants and Shrubs in Central Verge	km	33520.00
(b)	Maintenance of Flowering Plants and Shrubs in Central Verge for one Year	km	193094.00
11.9	Planting of Trees and their Maintenance for one Year (Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year)	each	2573.00
11.10	Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil (Renovation lawns including, weeding, forking the ground, top dressing with forked soil, watering and maintenance the lawns, for 30 days or more, till the grass forms a thick lawn, free from weeds, and fit for moving and disposal of rubbish as directed, including supplying good earth, if needed but excluding the cost of well decayed farm yard manure)	sqm	15.00
11.11	Supply at Site Well Decayed Farm Yard Manure (Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking)	cum	146.00
11.14	Half Brick Circular Tree Guard, in 2nd class Brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground (Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete)	each	2817.00
11.15	Edging with 2nd class Bricks, laid dry lengthwise (Edging with 2nd class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 metres)	metre	58.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
11.16	Making Tree Guard 53 cm dia and 1.3 m high as per design from empty bitumen drum (Making tree guard 53 cm dia and 1.3 m high as per design from empty bitumen drum, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets, complete in all respect)	each	243.00
11.17	Making Tree Guard 53 cm dia and 2 metres high as per design from empty bitumen drums (Making tree guard 53 cm dia and 2 metres high as per design from empty bitumen drums, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing four legs 40 cm long of 30 x 3 mm MS riveted to tree guard and providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets complete in all respects)	each	470.00
11.18	Wrought Iron and Mild Steel Welded Work (Wrought iron and mild steel welded work) (using angles, square bars, tees and channel grills, grating frames, gates and tree guards of any size and design etc. including cost of screens and welding rods or bolts and nuts complete fixed in position but without the cost of excavation and concrete for fixing which will be paid separately)	quintal	9398.00
11.19	Tree Guard with MS Iron (Providing and fixing MS iron tree guard 60 cm dia and 2 metre high above ground level formed of 4 Nos (25 x 6 mm) and 8 Nos (25 x 3 mm) vertical MS riveted to 3 Nos (25 x 6 mm) iron rings in two halves, bolted together with 8 mm dia and 30 mm long bolts including painting two coats with paint of approved brand over a coat of priming, complete in all respects.)	each tree guard	2337.00
11.20	Tree Guard with MS Angle Iron and Steel Wire (Providing and fixing tree guard 0.60 metre square, 2.00 metre high fabricated with MS angle iron 30 x 30 x 3 mm, MS iron 25 x 3 mm and steel wire 3 mm dia welded and fabricated as per design in two halves bolted together)	each tree guard	3843.00
11.21	Compensatory Afforestation (Planting trees as compensatory afforestation at the rate of 290 trees per hectare at a spacing of 6 m by grubbing and leveling the ground upto a depth of 150 mm, digging holes 0.9 m dia, 1 m deep, mixing farm yard/sludge manure with soil, planting of sapling 2 m high with 25 cm dia stem, backfilling the hole and watering)	hectare	112519.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-12		
	FOUNDATIONS		
12.1	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	121.00
(ii)	3 m to 6 m depth	cum	156.00
(iii)	Above 6 m depth	cum	208.00
B	Mechanical Means		
(i)	Depth upto 3 m	cum	63.00
(ii)	Depth 3 m to 6 m	cum	72.00
(iii)	Depth above 6m	cum	88.00
II	Ordinary rock (not requiring blasting)		
A	Manual Means		
(i)	Depth upto 3 m	cum	173.00
B	Mechanical Means	cum	81.00
III	Hard rock (requiring blasting)		
A	Manual Means	cum	462.00
IV	Hard rock (blasting prohibited)		
A	Mechanical Means	cum	582.00
V	Marshy soil		
(i)	upto 3 m depth		
A	Manual means	cum	496.00
B	Mechanical Means	cum	141.00
VI	Back Filling in Marshy Foundation Pits	cum	361.00
12.2	Filling Annular Space Around Footing in Rock (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per items 13.4.)		
12.3	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	958.00
12.4	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	5177.00
12.5	Brick masonry work in cement mortar 1:3 in foundation complete excluding pointing and plastering, as per drawing and technical specifications	cum	8495.00
12.6 A	Cement mortar1:3 (1cement :3 sand)	cum	4945.00
B	Cement mortar1:2 (1cement :2 sand)	cum	6196.00
C	Cement mortar1:4 (1cement :4 sand)	cum	4116.00
D	Cement mortar1:6 (1cement :6 sand)	cum	3298.00
12.7	Stone masonry work in cement mortar 1:3 in foundation complete as per drawing and Technical Specification		
(a)	Square Rubble Coursed rubble masonry(first sort)	cum	4267.00
(b)	Random Rubble Masonry	cum	4171.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
12.8	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications		
A	PCC Grade M15	cum	6107.00
B	PCC Grade M20	cum	6902.00
C	RCC Grade M20		
Case I	Using concrete mixer	cum	7149.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	6822.00
D	PCC Grade M25		
Case I	Using concrete Mixer	cum	7500.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7179.00
E	RCC Grade M25		
Case I	Using concrete Mixer	cum	7754.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7428.00
F	PCC Grade M30		
Case I	Using Concrete Mixer	cum	7549.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7222.00
G	RCC Grade M30		
Case I	Using Concrete Mixer	cum	7773.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7449.00
H	RCC Grade M35		
Case I	Using Concrete Mixer	cum	7904.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7582.00
12.9	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	39040.00
B	Assuming depth of water 4.0 m and height of island 4.5 m.	each	257510.00
C	Providing and constructing one span service road to reach island location from one pier location to another pier location	metre	2424.00
12.10	Providing and laying cutting edge of mild steel weighing 40 kg per metre for well foundation complete as per drawing and technical specification.	tonne	104806.00
12.11	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	8249.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7872.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(ii)	RCC M25 Grade		
Case I	Using concrete mixer	cum	8970.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8733.00
(iii)	RCC M35 Grade		
Case I	Using concrete mixer	cum	9209.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8981.00
B	Well steining		
(I)	PCC M15 Grade	cum	6460.00
(ii)	PCC M20 Grade	cum	7301.00
(iii)	RCC M20 Grade		
Case I	Using concrete mixer	cum	7562.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7216.00
(iv)	PCC M25 Grade		
Case I	Using concrete mixer	cum	7953.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7611.00
(v)	RCC M25 Grade		
Case I	Using concrete mixer	cum	8223.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8005.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(vi)	PCC M30 Grade		
Case I	Using concrete mixer	cum	8024.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7675.00
(vii)	RCC M30 Grade		
Case I	Using concrete mixer	cum	8262.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7918.00
(viii)	RCC M35 Grade		
Case I	Using concrete mixer	cum	8442.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8233.00
(ix)	RCC M40 Grade		8329.00
C	Bottom Plug		
(i)	PCC Grade M20		
Case I	Using Concrete Mixer	cum	7544.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	7215.00
(ii)	PCC Grade M25		
Case I	Using Concrete Mixer	cum	7890.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	7557.00
(iii)	PCC Grade M30		
Case I	Using Concrete Mixer	cum	7957.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	7628.00
(iv)	PCC Grade M35		
Case I	Using Concrete Mixer	cum	8115.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	7782.00
D	Intermediate plug		
(I)	Grade M20 PCC		
Case I	Using Concrete Mixer	cum	7212.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	6894.00
(ii)	Grade M25 PCC		
Case I	Using Concrete Mixer	cum	7541.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	7220.00
(iii)	Grade M30 PCC		
Case I	Using Concrete Mixer	cum	7606.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	7288.00
E	Top plug		
(i)	Grade M15 PCC		
Case I	Using Concrete Mixer	cum	5873.00
(ii)	Grade M20 PCC		
Case I	Using Concrete Mixer	cum	6637.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(iii)	Grade M25 PCC		
Case I	Using Concrete Mixer	cum	7230.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	6919.00
(iv)	Grade M30 PCC		
Case I	Using Concrete Mixer	cum	7294.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	6978.00
F	Well cap		
(i)	RCC Grade M20		
Case I	Using concrete Mixer	cum	7082.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	6753.00
(ii)	RCC Grade M25		
Case I	Using concrete Mixer	cum	7754.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7430.00
(iii)	RCC Grade M30		
Case I	Using Concrete Mixer	cum	7773.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7448.00
(iv)	RCC Grade M35		
Case I	Using Concrete Mixer	cum	7904.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7582.00
(v)	RCC M40 Grade	cum	7854.00
12.12	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	3476.00
(ii)	Beyond 3m upto 10m depth	metre	4872.00
(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	6436.00
(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	12073.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .		14487.00
(v)	Beyond 30m upto 40 m	metre	
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter		28685.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	34423.00
B	Clayey soil (6m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	4905.00
(ii)	Beyond 3m upto 10m depth	metre	11462.00
(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	15138.00
b	Add for dewatering @ 5% of cost, if required.	metre	15894.00
(iv)	Beyond 20m upto 30 m		

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
a	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	28392.00
b	Add 5% of cost for dewatering of the cost, if required	metre	37265.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	35490.00
(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	67456.00
b	Add 5% of cost for dewatering, if required	metre	84995.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	80948.00
C	Soft rock (6m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	18311.00
D	Hard rock (6m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	17316.00
12.13	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	10115.00
(ii)	Beyond 3m upto 10m depth	metre	6795.00
(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	8975.00
(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	16833.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour) .	metre	20200.00
(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	39992.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	47991.00
B	Clayey soil (7m dia. Well)		
(I)	Depth below bed level upto 3.0 M	metre	6795.00
(ii)	Beyond 3m upto 10m depth	metre	9700.00
(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	12811.00
b	Add for dewatering @ 5% of cost, if required.	metre	13451.00
(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	24029.00
b	Add 5% of cost for dewatering on the cost, if required	metre	31538.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	30036.00
(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	57088.00
b	Add 5% of cost for dewatering, if required	metre	71930.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		68505.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
C	Soft rock (7m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	15543.00
D	Hard rock (7m dia well)		
(i)	Depth upto 3 m	metre	20726.00
12.14	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	6268.00
(ii)	Beyond 3m upto 10m depth	metre	7680.00
(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	10143.00
(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	19026.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	22831.00
(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	6688.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	8025.00
B	Clayey soil (8m dia. Well)		
(i)	Depth upto 3.0 M	metre	8327.00
(ii)	Beyond 3m upto 10m depth	metre	12445.00
(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	16436.00
b	Add for dewatering @ 5% of cost, if required.	metre	17258.00
(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	30828.00
b	Add 5% of cost for dewatering on the cost, if required	metre	40462.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	38535.00
(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	73243.00
b	Add 5% of cost for dewatering, if required	metre	92286.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	87892.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
C	Soft rock (8m dia well)		
(i)	Depth in soft rock strata upto 3m	metre	17248.00
D	Hard rock (8m dia well)		
(i)	Depth in hard rock strata upto 3 m	metre	21136.00
12.15	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	6371.00
(ii)	Beyond 3m upto 10m depth	metre	8413.00
(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	11111.00
(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	20843.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	25012.00
(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	49521.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	59425.00
B	Clayey soil (9m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	8829.00
(ii)	Beyond 3m upto 10m depth	metre	13385.00
(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	17678.00
b	Add for dewatering @ 5% of cost, if required.	metre	18562.00
(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	33160.00
b	Add 5% of cost for dewatering on the cost, if required	metre	43523.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	41451.00
(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	78786.00
b	Add 5% of cost for dewatering, if required	metre	99271.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	94543.00
C	Soft rock (9m dia well)		
(i)	Depth upto 3m	metre	21145.00
D	Hard rock (9m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	24889.00
12.16	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	7528.00
(ii)	Beyond 3m upto 10m depth	metre	8923.00
(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	11783.00
(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	22103.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	26523.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(v)	Beyond 30m upto 40 m		
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	52513.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	63015.00
B	Clayey soil (10m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	9922.00
(ii)	Beyond 3m upto 10m depth	metre	13550.00
(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	17896.00
b	Add for dewatering @ 5% of cost, if required.	metre	18790.00
(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	33569.00
'b	Add 5% of cost for dewatering on the cost, if required	metre	44059.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	41961.00
(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	79756.00
b	Add 5% of cost for dewatering, if required	metre	100493.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		95707.00
C	Soft rock (10m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	21517.00
D	Hard rock (10m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	27303.00
12.17	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	17014.00
(ii)	Beyond 3m upto 10m depth	metre	14363.00
(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	18969.00
(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	35581.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	42697.00
(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	84534.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	101441.00
B	Clayey soil (11 m dia. Well)		
(i)	Depth from bed level upto 3.0 M	metre	16555.00
(ii)	Beyond 3m upto 10m depth	metre	28263.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(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	37327.00
b	Add for dewatering @ 5% of cost, if required.	metre	39194.00
(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	70017.00
b	Add 5% of cost for dewatering on the cost, if required	metre	91897.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	87521.00
(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	166351.00
b	Add 5% of cost for dewatering, if required	metre	209603.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	199621.00
C	Soft rock (11m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	47786.00
D	Hard rock (11m dia well)		
(i)	Depth of hard rock upto 3 m	metre	60689.00
12.18	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	35680.00
(ii)	Beyond 3m upto 10m depth	metre	40798.00
(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	53881.00
(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	101067.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	121280.00
(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	240119.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	288143.00
B	Clayey soil (12 m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	40293.00
(ii)	Beyond 3m upto 10m depth	metre	68180.00
(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	90043.00
b	Add for dewatering @ 5% of cost, if required.	metre	94545.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	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	168897.00
b	Add 5% of cost for dewatering on the cost, if required	metre	221677.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	211121.00
(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	401275.00
b	Add 5% of cost for dewatering, if required	metre	505606.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	481530.00
C	Soft rock (12m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	110088.00
D	Hard rock (12m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	135399.00
12.19	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	8022.00
(ii)	Beyond 3m upto 10m depth	metre	8693.00
(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	11480.00
(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	21534.00
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	25840.00
(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	51161.00
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	61393.00
B	Clayey soil (Twin D Type Well)		
(i)	Depth below bed level upto 3.0 M	metre	9595.00
(ii)	Beyond 3m upto 10m depth	metre	15019.00
(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	19836.00
b	Add for dewatering @ 5% of cost, if required.	metre	20827.00
(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	37206.00
b	Add 5% of cost for dewatering on the cost, if required	metre	48833.00
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	46508.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(v)	Beyond 30m upto 40 m		
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	88394.00
b	Add 5% of cost for dewatering, if required	metre	111377.00
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	106073.00
C	Soft rock (Twin D Type well)		
(i)	Depth of soft rock strata upto 3m	metre	24468.00
D	Hard rock (Twin D Type well)		
(i)	Depth of hard rock strata upto 3 m	metre	28718.00
12.21	Sand filling in wells complete as per drawing and technical specifications	cum	958.00
12.22	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	94837.00
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	6799.00
12.24	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	11214.00
12.25	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	14525.00
12.26	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	5752.00
12.27	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	9218.00
12.28	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	13457.00
12.37	Pile load test on single vertical pile in accordance with IS:2911(Part-IV)		
	(a) Initial and routine load test	tonne	300.00
	(b) Lateral load test	tonne	5000.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
12.38	Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification		
A	RCC Grade M20		
(i)	Using Concrete Mixer	cum	7092.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	6795.00
B	RCC Grade M25		
(i)	Using concrete mixer.	cum	7739.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7444.00
C	RCC Grade M30		
(i)	Using concrete mixer.	cum	7820.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7524.00
D	RCC Grade M35		
(i)	Using concrete mixer.	cum	7991.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	7696.00
12.39	Levelling course for Pile cap	cum	5786.00
12.40	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specifications	tonne	78187.00
12.41	Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification	tonne	78496.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-13		
	SUB-STRUCTURE		
13.1	Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and technical specifications	cum	8628.00
13.2	Pointing with cement mortar (1:3) on brick work in substructure as per Technical specifications	sqm	64.10
13.3	Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical specifications	sqm	138.50
13.4	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications		
A	Random Rubble Masonry	cum	4227.00
B	Coursed rubble masonry (first sort)	cum	4372.00
C	Ashlar masonry (first sort)	cum	5519.00
13.5	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications		
A	PCC Grade M15		
(p)	Height upto 5m	cum	6460.00
B	PCC Grade M20		
(p)	Height upto 5m	cum	7301.00
C	PCC Grade M25		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	7953.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7611.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8242.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7888.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8603.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8234.00
D	PCC Grade M30		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	8024.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7675.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8316.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7954.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8680.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8303.00
E	RCC Grade M20		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	7562.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7216.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	7837.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7479.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8181.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7807.00
F	RCC Grade M25		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	8223.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8005.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8492.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8267.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8895.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8660.00
G	RCC Grade M30		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	8262.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	7918.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8495.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8141.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8825.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8458.00
H	RCC Grade M35		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	8442.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8233.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	8626.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8412.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	8902.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	8682.00
13.6	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	tonne	78328.00
13.7	Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and technical specification	tonne	77710.00
13.8	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing face. Complete as per drawing and Technical specifications	each	140.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
13.9	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification		
A	Granular material	cum	963.00
B	Sandy material	cum	1201.00
13.10	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	2122.00
13.11	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	1616.00
13.12	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	1422.00
13.13	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	3032.00
13.14	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	1.00
13.15	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	248.00
13.16	Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete as per drawing and approved technical specifications.	tonne capacity	326.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-14		
	SUPER-STRUCTURE		
14.1	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	8172.00
(q)	Height 5m to 10m	cum	8512.00
(r)	Height above 10m	cum	8853.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	8512.00
(q)	Height 5m to 10m	cum	8853.00
(r)	Height above 10m	cum	9193.00
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	7792.00
(q)	Height 5m to 10m	cum	8117.00
(r)	Height above 10m	cum	8441.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	8117.00
(q)	Height 5m to 10m	cum	8441.00
(r)	Height above 10m	cum	8766.00
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	8917.00
(q)	Height 5m to 10m	cum	9289.00
(r)	Height above 10m	cum	9661.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	9289.00
(q)	Height 5m to 10m	cum	9661.00
(r)	Height above 10m	cum	10032.00
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	8547.00
(q)	Height 5m to 10m	cum	8903.00
(r)	Height above 10m	cum	9259.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	8903.00
(q)	Height 5m to 10m	cum	9259.00
(r)	Height above 10m	cum	9615.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
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	9039.00
(q)	Height 5m to 10m	cum	9416.00
(r)	Height above 10m	cum	9793.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	9416.00
(q)	Height 5m to 10m	cum	9793.00
(r)	Height above 10m	cum	10169.00
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	8643.00
(q)	Height 5m to 10m	cum	9003.00
(r)	Height above 10m	cum	9364.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	9003.00
(q)	Height 5m to 10m	cum	9364.00
(r)	Height above 10m	cum	9724.00
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	9083.00
(q)	Height 5m to 10m	cum	9468.00
(r)	Height above 10m	cum	9853.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	9468.00
(q)	Height 5m to 10m	cum	9853.00
(r)	Height above 10m	cum	10237.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	10622.00
(q)	Height 5m to 10m	cum	11392.00
(r)	Height above 10m	cum	12162.00
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	8690.00
(q)	Height 5m to 10m	cum	9058.00
(r)	Height above 10m	cum	9426.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	9058.00
(q)	Height 5m to 10m	cum	9426.00
(r)	Height above 10m	cum	9795.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	10163.00
(q)	Height 5m to 10m	cum	10899.00
(r)	Height above 10m	cum	11636.00
E	PSC Grade M-40		
Case I	Using concrete mixer.		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	9539.00
(q)	Height 5m to 10m	cum	9936.00
(r)	Height above 10m	cum	10334.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	9936.00
(q)	Height 5m to 10m	cum	10334.00
(r)	Height above 10m	cum	10731.00
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	8945.00
(q)	Height 5m to 10m	cum	9324.00
(r)	Height above 10m	cum	9703.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	9324.00
(q)	Height 5m to 10m	cum	9703.00
(r)	Height above 10m	cum	10082.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	10461.00
(q)	Height 5m to 10m	cum	11219.00
(r)	Height above 10m	cum	11977.00
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	9240.00
(q)	Height 5m to 10m	cum	9638.00
(r)	Height above 10m	cum	10037.00
(ii)	For I-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	9638.00
(q)	Height 5m to 10m	cum	10037.00
(r)	Height above 10m	cum	10435.00
(iii)	For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56% of cost of concrete.		
(p)	Height upto 5m	cum	10833.00
(q)	Height 5m to 10m	cum	11630.00
(r)	Height above 10m	cum	12426.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
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	11125.00
(q)	Height 5m to 10m	cum	11949.00
(r)	Height above 10m	cum	12773.00
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	11707.00
(q)	Height 5m to 10m	cum	12574.00
(r)	Height above 10m	cum	13441.47
14.2	a) Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications	tonne	79602.00
14.3	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications	tonne	119653.00
14.4	Providing and laying Cement concrete wearing coat M-30 grade including reinforcement complete as per drawing and Technical Specifications	cum	13223.00
14.5	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	382.00
14.6	Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	metre	2183.00
14.7	Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	metre	2122.00
14.8	Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specification	metre	3857.00
14.9	Drainage Spouts complete as per drawing and Technical specification	each	771.00
14.10	PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification	cum	5873.00
14.11	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification	cum	11322.00
14.15	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.)		
14.16	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.)	metre	78.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
14.17	Burried Joint (Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised weldable structural steel plate as per IS: 2062, placed symmetrical to centre line of the joint, resting freely over the top surface of the deck concrete, welding of 8 mm dia. 100 mm long galvanised nails spaced 300 mm c/c along the centre line of the plate, all as specified in clause 2604.)	metre	1443.00
14.18	Filler joint		
(i)	Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.	metre	4030.00
(ii)	Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.	metre	232.00
(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	228.00
(iv)	Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight	metre	25.00
14.19	Asphaltic Plug joint (Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of weldable structural steel conforming to IS: 2062, asphaltic plug to consist of polymer modified bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking/backer rod, all as per approved drawings and specifications.)	metre	3088.00
14.20	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	13773.00
14.21	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	16098.00
14.22	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	16813.00
14.23	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	275927.00
14.24	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	304979.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-15		
	RIVER TRAINING AND PROTECTION WORKS		
15.1	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	1128.00
15.2	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	1886.00
15.3	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	6229.00
15.4	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	1128.00
B	Cement Concrete blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15	cum	6229.00
15.5	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum	2303.00
15.7	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.)		
15.8	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	5124.00
B	Cement Concrete blocks Grade M15	cum	8204.00
15.9	Dry rubble Flooring	cum	1486.00
15.10	Curtain wall complete as per drawing and Technical specification		
A	Stone masonry in cement mortar (1:3)	cum	4267.00
B	Cement concrete Grade M15	cum	6107.00
15.11	Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.	cum	1173.00
15.12	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	1990.00
15.13	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	3346.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-16		
	REPAIR AND REHABILITATION		
16.1	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	121.00
16.2	Removal of existing asphaltic wearing coat comprising of 50 mm thick asphaltic concrete laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000m.	sqm	91.00
16.3	Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical specification	sqm	923.00
16.4	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	140.00
16.5	Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical specification.		
A	Cement Grout	kg	41.00
B	Cement mortar (1:1) Grouting	kg	134.00
16.6	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	1359.00
16.7	Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.	kg	767.00
16.9	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	347.00
16.10	Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete	sqm	111.00
16.11	Epoxy bonding of new concrete to old concrete	sqm	139.00
16.17	Replacement of Expansion Joints complete as per drawings	metre	2769.00
16.18	Replacement of damaged concrete railing.	metre	210.00
16.19	Replacement of crash barrier.	metre	369.00
16.20	Replacement of damaged mild steel railing	metre	178.00
16.21	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	228.00
16.22	Repair of RCC Railing (Carrying out repair of RCC M30 railing to bring it to the original shape.)	metre	151.00
16.23	Repair of steel Railing (Repair of steel railing to bring it to the original shape)	metre	312.00

<u>Summary of Rate Analysis</u>			
Item No.	Descriptions	Unit	Rate
	CHAPTER-17		
	STEEL BRIDGES		
17.1	Supply and fabrication of steel work at Fabricators workshop comprising of Main Girders, Cross Girders, Connecting plates, stringer, stiffening plates etc. from steel plates and structural steel of specified grades as per approved drawing including straightening, descaling, degreasing, cutting to size and shape, drilling, welding and grinding, supply of all MS/HTS shop or site bolts, nuts & washers, holding down bolts and nuts etc., trial assembling at workshop, one priming coat of shop paint with red lead paint conforming to IS-102 with all labour, material, cost of paints, consumables, stacking in protected condition etc. complete as per specification and as directed by the Engineer-in-Charge (Carriage cost from fabricator work shop to actual bridge site will be paid seperately).		
A	COMPOSITE BRIDGE		
Case (i)	Worked out based on 40m single span or in Multiples	tonne	104805.00
17.2	Taking delivery of fabricated steelwork from stacks at site as necessary, assembling and erection of fabricated steel structure to proper line , level and camber as per approved drawings complete in all respect including transportation and handling supply of all fasteners. Painting of all exposed surfaces of steelwork after erection with one coat of red lead confirming to IS-102 and two coats Alumunimium paint to IS-2339, grouting of anchor bolts in position, including all labour, consumables, materials, machinery, tools and tackles complete as per specification and as directed by the Engineer-in-Charge		
A	COMPOSITE BRIDGE		
Case (i)	Worked out based on 40m single span or in Multiples	tonne	32718.00