

BASIC APPROACH AND GENERAL CONDITIONS AND ASSUMPTIONS FOR THE PREPARATION OF SHEDULE OF RATES BASED ON STANDARD DATA BOOK

The basic approach for the preparation of Standard Data Book for analysis of rates/schedule of rates for Rural Roads is indicated as under:

1 Description of items: The description of items is given briefly and linked with the relevant Clauses of the Ministry of Rural Development's (MORD) Specifications wherever feasible, which may be referred for detailed description, provisions and interpretation.

2 Use of Machinery

- 2.1. The Standard Data Book is based on the assumption that Rural Roads in our country are to be constructed with intermediate technology, i.e., manual means with medium input of machinery, wherever required to ensure the required quality of work.
- 2.2. For rolling, use of static roller has been generally considered. However, use of vibratory pneumatic type roller has been considered wherever required as per provisions of MORD Specifications.

3 Working Conditions

- 3.1. Rates have been analysed for average working conditions prevailing in the country.
- 3.2. Average achievable outputs of machines and labour have been considered taking into account the job and management factors.
- 3.3. However, the output of machineries and labour reduces substantially in hilly areas as the altitude increases. Therefore, for hilly areas reduced outputs have been considered as indicated in the preamble of Chapter 8.

4 Overheads: The overheads are considered as 2.5% per cent for items of road works and 10% (per cent) for items of bridge works as approved by the Government of India Ministry of Rural Development New Delhi. This is assumed to include interalia the following elements:

- i. Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
- ii. Site office infrastructure.
- iii. Expenditure on
 - (a) Corporate office of the Contractor
 - (b) Site supervision by the Contractor
 - (c) Preparation of "as built" drawings
- iv. Mobilisation/demobilisation of resources.
- v. Labour camps with minimum amenities, required as per labour laws.
- vi. Light vehicles for site supervision including administrative and managerial requirements.
- vii. Setting up of laboratories for quality control, field and laboratory testing for control of quality of various items of work and documentation of test results as per requirements of the MORD Specifications.
- viii. Minor T&P including needle vibrators required for concrete work.

- ix. Survey instruments and the task of setting out of works including verification of line and dimensions (but excluding construction of bench marks and reference pillars which are separate items under setting out).
- x. Taking of trial pits and bore holes, where required as per the MORD Specifications.
- xi. Watch and ward.
- xii. Arrangement for traffic and traffic management during construction.
- xiii. Expenditure on safeguarding environment during construction.
- xiv. Sundries.
- xv. Financing expenditure of the Contractor.
- xvi. Work insurance/compensation.
- xvii. Sales/Turnover tax has been assumed at 4%. In case this tax is more than 4% in certain States the percentage of overheads should be increased correspondingly.

5 Contractor's Profit: Contractor's profit is considered @ 10 per cent uniformly and is added on Overheads also.

6 General:

- 6.1. The Clause numbers refer to the MORD Specifications for Rural Roads and Cross Drainage Works.
- 6.2. Additional assumptions made for analysing different items have been indicated in respective Chapters in the form of preamble and notes/footnotes wherever required.
- 6.3. For some of the items, certain size/specifications have been assumed. If size/specifications other than the same are adopted, corresponding modifications may be made in the inputs of analysis.
- 6.4. In the rate analysis of some items, the quantities of sub-items involved in that analysis, like excavation for foundation, foundation concrete, masonry work, painting, lettering, etc. have been given. For rate analysis of such sub-items, reference may be made to relevant Chapters dealing with the sub-items.
- 6.5. The sources of all materials and samples of materials are required to be approved by the Engineer before start of such work.
- 6.6. For pipe culverts NP2, NP3 and NP4 pipes have been considered.
- 6.7. For reinforcing steel both HYSD and TMT Bars conforming to IS:1786 have been considered
- 6.8. Quality control of works shall be governed by the relevant MORD Specifications.

7 Basic Inputs

- 7.1. The Standard Data Book is based on the requirements of basic inputs of materials, labour and machineries for various items.
- 7.2. The rates for material and labour for the area where the project is located are to be ascertained from local authorities/enquiries to prepare SOR for the area. However, the usage charges of machineries shall be considered as given in Chapter 15 of this Data Book.

- 7.3. The basic rates of materials, such as, stone boulders, stone for masonry, stone ballast (hand broken/machine broken), crushed aggregate, stone dust, moorum, gravel, lime, manure, sludge, quarry sweep, kankar, bricks, brick ballast, crushed slag, etc. at quarry/crusher sites shall be fixed by the respective States for various zones from time to time.
- 7.4. While preparing estimates/Detailed Notice Inviting Tender/Analysis of rates, only the basic rates fixed by respective States for concerned zones should be adopted.
- 7.5. The cost of materials should include the cost at source and the cost of their carriage upto the work site.
- 7.6. Although market rates for supply of aggregates at site are generally adopted for estimation purpose, rates for crushing of aggregates have also been analysed as most Contractors prefer to crush their own aggregates in case of larger sized projects. The cost of materials shall be evaluated considering the cost at crushing plants and its carriage upto the work site. These should be compared with rates for own crushing and carriage by the construction agency and lesser of the rates should be adopted for estimation purpose.

8 Plants and Equipment:

- 8.1. Keeping in view the job and managerial factors and the age factor of machines, the output of plant and equipment is taken approximately 70 per cent of the rated capacity given by manufacturer under ideal conditions.
- 8.2. The requirement of machinery has been worked out assuming working period of 6 hours per shift of 8 hours.
- 8.3. Certain equipment, like, road rollers, are required to be available at site for complete period of the shift, though from the consideration of their output, they may be required only for 3 to 4 hours. This is necessitated to match with the output of other associated machines, like, HMP, Pavers, etc. In such cases, the hire charges of road rollers have been multiplied with a factor of 0.65 to account for the idle period wherever considered appropriate.
- 8.4. Though electrically operated equipment, like, concrete mixers and vibrators have been provided, diesel operated equipment can be used where electricity is not available.
- 8.5. Wherever electric generator has not been provided to run a plant or equipment, it is assumed that it is fitted with a diesel engine.
- 8.6. For small jobs where loading and unloading is required to be done manually, tractor-trolley has been considered for carriage instead of tipper.
- 8.7. Output of plant/equipment is considered for the compacted quantities.
- 8.8. A water tanker of 6 kl capacity which is commonly used at construction sites has been considered.
- 8.9. 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.

9 Labour:

- 9.1. For labour, the general classification is mazdoor, bhisti, etc. for unskilled labour and mason, fitter, blacksmith, etc. for skilled labour.

- 9.2. One mate has been provided for 25 labours for all items of works.
- 9.3. The labour wages should be as per rates fixed by State Government and the Schedule Tribe area of the state shall be allowed 25 % enhancement on the labour wages.

10 Materials:

- 10.1. Quantities of materials considered in the rate analysis are approximate for the purpose of estimation and include normal wastages. Actual consumption would depend on mix design.
- 10.2. The rates of material should include basic cost at locations of stone crushers/ factory/ rail head and cost of its carriage to the site of work/plant including loading, unloading and stacking.
- 10.3. The supply of materials will be taken either at the location of mixing plant or at the work site as per requirement of use.
- 10.4. Contractor will make his own arrangements for borrowing earth. However, compensation for earth taken from private land has been included in the rate analysis for construction of embankment/ sub-grade with borrowed earth.
- 10.5. Credit for Dismantled Material: The dismantled materials should be examined and a realistic assessment made for credit for such materials, which can be utilized for works or auctioned.
- 10.6. The basic rates should include all octroi charges, toll tax, sale tax, VAT, municipal taxes and other local taxes, etc.

11 Items of Culverts:

Items in Chapters 11, 12 & 13 on Foundation, Substructure and Superstructure cover both minor bridge works as well as slab culverts as per Chapter 1200 of MORD Specifications. Items of pipe culverts are, however, covered separately in Chapter 9.

12 Concrete Items:

- 12.1. For concrete work, the grades of concrete covered by the Data Book in accordance with MORD Specifications are:-
- i) PCC M-15 grade to M-25 for structures (For lean concrete under foundation M-10 can be used).
 - ii) RCC grade M-20, M-25 and M-30 for structures
 - iii) Design mix concrete – M-25 and M-30 for concrete pavement
- 12.2. The analysis of rates accounts for input of materials by weight and use of ordinary mixer.
- 12.3. Use of vibrators for all concreting work has been included in the items.
- 12.4. Ten per cent extra cement may be provided for concreting under water, where required.
- 12.5. Quantities of cement in various grades of cement concrete are to be as per nominal mix/ design mix. Grade of cement may also be adopted as per mix design.

- 12.6. Quantities of cement in various grades of cement concrete for structures have been taken as per IRC: 21:2000 & IRC:78:2000.
 - 12.7. Steel reinforcement for cement concrete work is required to be provided separately. The rate for the same has been analysed separately.
 - 12.8. As per the MORD Specifications, the type of superstructure envisaged for rural roads are RCC slabs and box culverts not exceeding 15 m span as well brick/stone masonry arches and composite girder type of superstructure. RCC arches provided for in IRC:SP:20 have also been analysed.
- 13** The MORD Specifications includes specifications for the items of turfing with sods and seeding and mulching in Chapter 1600 of Hill Road Construction only. However, in view of the importance of these items for erosion control in all locations, these have also been analysed in Chapter 3 of this document.

14 Privileged Document:

The Standard Data Book in for Department use ONLY. It should not be produced in any court of law as reference/authority and to that extent it is a privileged document.

CHAPTER - A
BASIC RATE OF LABOUR

Preamble:

- 1 These rates are exclusive of contractor's profit and overheads and do not take into account one day's paid holiday after six working days. (The rates adopted in rate-analysis are 7/6th of there basic rates so as to include the effect of one holiday after every six working days)
- 2 For employment of departmental labour on muster-rolls, the rates given below may be considered as maximum rates up to which an Executive Engineer can authorise employment of labour. If in a certain locality, prevailing conditions necessitate payment of higher rates of wages, the Superintending Engineer shall increase the rates suitably for a specifies period, not exceeding 3 months after which the rates should be reviewed again and revised downwards of the conditions so warrant.
- 3 The labour wages should be as per rates fixed by the State Government. The Schedule Tribal area of the state shall be allowed 25% enhancement on the labour wages.

ANNEXURE-A

BASIC RATES OF LABOUR

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

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

ANNEXURE-B

USAGE RATES OF PLANT & MACHINERY

Sr.No.	Description of machinery		Output of Machine		Unit	Av. Rate 2016
	Machine	Activity	Unit	Output		
1	Air Compressor 210 cfm	Supplying compressed air	cfm	210	per hour	465
2	Batch mix HMP 40-60 TPH	BM, DBM, SDBC, PM	t/h	50	per hour	16896
3	Batch type HMP 30/40 TPH	BM, DBM, SDBC, PM	t/h	35	per hour	13798
4	Bitumen boiler oil fired	Heating of bitumen				
	200 litre		litre / h	400	per hour	445
	1000 litre		litre / h	2000	per hour	1408
5	Bitumen emulsion pressure distributor	Applying bitumen tack coat	sqm/h	1750	per hour	1569
6	Concrete mixer 0.28/0.4 cum	Mixing of ingredients	cum/h	2.50	per hour	350
7	Crane upto 8T	Lifting of materials			per hour	916
8	Dozer D 50	Dozing cutting	cum/h	200.00	per hour	6285
			cum/h	100.00		3160
9	Electric generator set, 125 KVA	Electricity generation	KVA	100.00	per hour	1125
10	Emulsion Sprayer with Tractor	Spraying of Emulsion			per hour	1258
11	Front end-loader 1 cum bucket capacity @ 45 cum/hour	Loading Aggregates	cum/h	45.00	per hour	1281
		Loading Soil	cum/h	100.00		1321
12	Hydraulic broom with tractor	Surface cleaning	sqm/h	1250	per hour	528
13	Hydraulic Excavator 0.9 cum	Excavation	cum/h	100.00	per hour	1843
14	Hydraulic self propelled chip spreader	Surface Dressing	sqm/h	1500	per hour	4130
15	Jack Hammer with tractor	Pavement breaking & rock drilling	cum/h	05. to 1	per hour	2316
16	Joint Cutting Machine with 2-3 blades	Cutting of Joints	h		per hour	1191
17	Mixall 6-10 t capacity	Mixing of bituminous materials	t/h	8.00	per hour	2519
18	Motor Grader	Scarifier & levelling	cum/h	200.00	per hour	3513
				50.00		2318
19	Needle vibrator	Vibrating cement concrete mix	cum/h	3.50	per hour	113

Sr.No.	Description of machinery		Output of Machine		Unit	Av. Rate 2016
	Machine	Activity	Unit	Output		
20	Paver finisher	Laying/spreading	t/h	75.00	per hour	4300
21	Plate compactor	Compaction	cum/h		per hour	105
22	Plate vibrator	Compaction	cum/h		per hour	98
23	Screed vibrator	Compaction	cum/h		per hour	98
24	Smooth wheeled 80-100 kN tandem roller	Compaction of Sub-base/ Asphalt	cum/h	30.00	per hour	1319
25	Stone crusher (Integrated) of 200 TPH	Crushing of Spalls	t/h	200.00	per hour	3983
26	Three wheel 80-100 kN Static Roller	Compaction/ Rolling			per hour	
		Earth:- Embankment or sub-grade	cum/h	80/70		791
		Sub-base G-I	cum/h	10.00		745
		Sub-base G-II/G-III	cum/h	8.00		741
		WMM	cum/h	16.00		741
		BUSG	cum/h	10.00		741
		BM 50/75 mm	cum/h	12.00		741
		Premix 20 mm	sqm/h	250.00		741
		Seal Coat	sqm/h	500.00		741
		Surface Dressing 1st Coat	sqm/h	400.00		741
		Surface Dressing 2ndCoat	sqm/h	500.00		741
27	Tipper 5.5 cum/10 t	Carriage	cum/trip	5.50	per hour	513
28	Tractor with Disc Harrows	Pulverisation of soil	cum/h	80.00	per hour	801
29	Tractor with ripper @ 60 cum per hour	Ripping Pavements, uprooting trees	cum/h	60.00	per hour	687
30	Tractor with trolley	Transportation of materials	t/trip	3 to 5	per hour	581
31	Tractor with Rotavator	Scarifier	cum/h	25.00	per hour	688
32	Tractor Mount Grader	Spreading	cum/h	26.00	per hour	1192
33	Truck 10 t capacity	Carriage	cum/trip	5.50	per hour	589
34	Vibratory roller 80-100 kN	Compaction of soil WMM	cum/h	100.00	per hour	2417
		Compaction of BM	cum/h	60.00		2417

Sr.No.	Description of machinery		Output of Machine		Unit	Av. Rate 2016
	Machine	Activity	Unit	Output		
35	Water tanker 6 kl capacity (Truck Mounted)	Carriage of water	litre / h	12000	per hour	500
36	Wet mix plant (Pug Mill)	Wet Mix	cum/h	25	per hour	1840
37	Grout pump with agitator and accessories		hour	0	0	682
38	Concrete Pump		hour	0	0	1565
39	Epoxy Injection gun		hour	0	0	809
40	Stressing jack with pump		hour	0	0	328
41	Grouting pump with agitator		hour	0	0	680
42	i) Hire charges for jack of 40 tonne lifting capacity.		Day	0	0	546
43	Mastic cooker 1 tonne capacity		hour	0	0	109
44	Trailer 35 tonne capacity for transporting to site.		tonne.km	0	0	2202
45	Trailor 30 tonne capacity during placement.		hour	0	0	2224
46	Transit Mixer 4.0/4.5 cum		hour	0	0	1601
47	Transit Mixer 30 cum		hour	0	0	1464
48	Integrated Stone Crusher 100THP	100 TPH	hour	0	0	15044
49	Integrated Stone Crusher 200 HP	200 TPH	hour	0	0	20872
50	Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.		hour	0	0	8327

CHAPTER - C
BASIC RATE OF MATERIALS

Preamble:

- 1 All the rates in this Chapter are for the materials ex-PWD store except where specified otherwise.
- 2 These rates are exclusive of carriage, contractor's profit and overheads but include Octroi, Toll-Tax, Malkana, Royalty, Sales Tax, Vat etc. whereve applicable.
- 3 The rates are for the purpose of ananalysis the rates of items of work and not for obtaining supplies from open market. Supplies shall be obtained either through controller of stores, HP or after calling tender or quotations as may be required under rules and order in force.
- 4 The rates shall not be issued for issuing materials from Government Stores.

ANNEXURE-C
BASIC RATES OF MATERIAL

Sr. No.	Description	Unit	Av. Rate
1	Aggregate - Grading I (40 mm nominal Size) 37.25 mm - 25 mm	cum	1093.00
2	Aggregate - Grading I (40 mm nominal Size) 5 mm and below	cum	1227.00
3	Aggregate - Grading II (19 mm nominal Size) 10 mm - 5 mm	cum	5573.00
4	Aggregate - Grading II (19 mm nominal Size) 25 mm – 10 mm	cum	5573.00
5	Aggregate - Grading II (19 mm nominal Size) 5 mm and below	cum	1158.00
6	Aggregate 10 mm	cum	1281.00
7	Aggregate 20 mm	cum	1276.00
8	Aggregate 40 mm	cum	1069.00
9	Aggregate- Crushable type such as moorum or Gravel for Grading I	cum	907.00
10	Aggregate- Crushable type such as moorum or Gravel for Grading II	cum	914.00
11	Aggregate- Crushable type such as moorum or Gravel for Grading III	cum	957.00
12	Aggregate-Grading I 90 mm to 45 mm	cum	952.00
13	Aggregate-Grading II 63 mm to 45 mm	cum	999.00
14	Aggregate-Grading III 53 mm to 22.4 mm	cum	1067.00
15	Aggregates 22.4 mm to 2.36 mm for wet mix macadam	cum	1103.00
16	Aggregates 45 mm to 22.4 mm for wet mix macadam	cum	1073.00
17	Aluminium sheeting (1.5 mm thick)	sqm	406.00
18	Angle Iron 50 mm x 50 mm x 6 mm	Kg	74.00
19	Binding Material for road	cum	663.00
20	Binding wire	kg	83.00
21	Bitumen (Crumb Rubber Modified)	tonne	52350.00
22	Bitumen (S-90)	t	50100.00
23	Bitumen Emulsion (RS-1)	t	50383.00
24	Bitumen Emulsion (SS-1)	t	52574.00
25	Bitumen emulsion (MS)	t	60519.00
26	Bond stone (400 mm x 150 mm x 150 mm)	No.	30.00
27	Brick 1st Class	No.	9.00
28	Cement	t	7688.00
29	Crushed Sand or Grit Passing 2.36 mm and retained on 180 micron	cum	1093.00

Sr. No.	Description	Unit	Av. Rate
30	Crushed Stone Aggregate 26.5 mm to 75 micron	cum	1145.00
31	Crushed Stone chipping 13.2 mm nominal size	cum	1220.00
32	Crushed Stone Chipping 6.7 mm size 100% passing 11.2 mm and retained on 2.36 mm	cum	1231.00
33	Crushed Stone Chipping 6.7 mm size 100% passing 9.5 mm and retained on 2.36 mm	cum	1231.00
34	Crushed Stone chipping 9.5 mm nominal size	cum	1227.00
35	Crushed Stone Coarse Aggregate Passing 53 mm and retained on 2.8 mm	cum	1130.00
36	Electric Detonator	each	16.00
37	Filter media	cum	751.00
38	Fine aggregate/Crushed sand 2.36 mm to 75 micron	cum	1132.00
39	Fuel wood	Qtl	863.00
40	Gelatine 80 per cent	kg	98.00
41	Graded stone aggregate	cum	1029.00
42	Hand Broken Metal 40 mm size	cum	1022.00
43	Key Aggregates passing 22.4 mm and retained on 2.8 mm	cum	1117.00
44	Lime	t	11793.00
45	Loose stone for filling	cum	760.00
46	RCC Pipe NP2 (1200 mm dia) i/c collars	m	3809.00
47	RCC Pipe NP2 (1000 mm dia) i/c collars	m	3583.00
48	RCC Pipe NP2 (900 mm dia) i/c collars	m	3016.00
49	RCC Pipe NP3 (900 mm dia) i/c collars	m	4119.00
50	Road marking paint	litre	422.00
51	Sand (Coarse)	cum	1101.00
52	Sand (Fine)	cum	1111.00
53	Steel Reinforcement (HYSD Bars)	t	56871.00
54	Steel Reinforcement (MS Round Bars)	t	52548.00
55	Steel Reinforcement (TMT Bars)	t	55559.00
56	Stone Boulder of size 150 mm and below (minimum 25 kg net)	cum	766.00
57	Stone Chips 12 mm size	cum	1208.00
58	Stone Chips 13.2 mm to 5.6 mm	cum	1217.00

Sr. No.	Description	Unit	Av. Rate
59	Stone Crushed Aggregate 11.2 mm to 0.09 mm	cum	1218.00
60	Stone for Coarse Rubble Masonry 1st Sort	cum	1368.00
61	Stone for Coarse Rubble Masonry 2nd Sort	cum	1303.00
62	Stone for Random Rubble Masonry	cum	1170.00
63	Stone for Stone Set Pavement (300 mm x 200 mm x 150 mm)	No.	21.00
64	Stone Screening - Type A 13.2 mm for Grading-1	cum	1213.00
65	Stone Screening - Type A 13.2 mm for Grading-2	cum	1213.00
66	Steel (ISMC) 100 mm	t	50100.00
67	Stone Screening - Type B 11.2 mm for Grading-2	cum	1213.00
68	Stone Screening - Type B 11.2 mm for Grading-3	cum	1213.00
69	Water	kl	102.00
70	Well graded Granular Base Material - Grading A 2.36 mm below	cum	956.00
71	Well graded Granular Base Material - Grading A 26.5 mm to 4.75 mm	cum	913.00
72	Well graded Granular Base Material - Grading A 53 mm to 26.5 mm	cum	872.00
73	Well graded Granular Base Material - Grading B 2.36 mm below	cum	888.00
74	Well graded Granular Base Material - Grading B 26.5 mm to 4.75 mm	cum	880.00
75	Well graded Granular Base Material - Grading C 2.36 mm below	cum	863.00
76	Well graded Granular Base Material - Grading C 2.36 mm below	cum	883.00
77	Well Graded Material for Sub-Base - Grading I 2.36 mm below	cum	856.00
78	Well Graded Granular sub-base material of Grading-I as per table 400.1 of Specification.	cum	938.00
79	Well Graded Granular sub-base material of Grading-II as per table 400.1 of Specification.	cum	924.00
80	Well Graded Granular sub-base material of Grading-III as per table 400.1 of Specification.	cum	914.00
81	Well Graded Gravel/Soil aggregate base material of Grading-A as per table 400.2 of Specification.	cum	920.00
82	Well Graded Gravel/Soil aggregate base material of Grading-B as per table 400.2 of Specification.	cum	938.00
83	Well Graded Gravel/Soil aggregate base material of Grading-C as per table 400.2 of Specification.	cum	946.00
84	Well Graded Gravel/Soil aggregate surface course material as per table 400.3 of Specification.	cum	922.00
85	Well Graded Gravel/Soil aggregate base material of nominal maximum size 80 mm as per table 2.3 of IRC SP 77-2008.	cum	929.00

Sr. No.	Description	Unit	Av. Rate
86	Well Graded Gravel/Soil aggregate base material of nominal maximum size 40 mm as per table 2.3 of IRC SP 77-2008.	cum	935.00
87	Well Graded Gravel/Soil aggregate base material of nominal maximum size 20 mm as per table 2.3 of IRC SP 77-2008.	cum	936.00
88	Well Graded Gravel/Soil aggregate base material of nominal maximum size 10 mm as per table 2.3 of IRC SP 77-2008.	cum	910.00
89	Well Graded Gravel/Soil aggregate base material of nominal maximum size 5 mm as per table 2.3 of IRC SP 77-2008.	cum	958.00
90	Apoxy Primer	Ltr.	206.00
91	Apoxy Paint	Ltr.	374.00
92	Steel paint	Ltr.	293.00
93	1.6 mm thick MS Sheet strengthened by 25mmX5mm MS flat iron on logo and middle plate angle iron 25mm X 25 mm X 5 mm on bottom plate painting with stove enameled paint on both sides as per MORD specification.	Per Sqm	1451.00
94	PVC pipe 100 mm dia.	Per rmt.	260.00
95	G.I.Wire		82.00
96	Granular material (Natural occurring, soil gravel mixture / quarry waste, Kankar, laterite, dhandla.		376.00
97	1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications	Per Sqm	1554.00
98	Cement Primer as per specifications	Ltr.	149.00
99	Paint conforming to requirement of Clause 1701.3.8	Ltr.	312.00
100	Compensation for earth taken from private land	Cum	63.00
101	Corrosion resistant structural steel grating including 5 per cent wastage	Kg	151.00
102	G I pipe 100 mm dia	Mtr.	837.00
103	MS tubes	Kg	91.00
104	Angle iron	kg	79.00
105	Wire mesh 50mm x 50mm size of 3mm wire	kg	134.00
106	Epoxy	kg	213.00
107	Accelerator compound for guniting @ 4 per cent of weight of cement	kg	156.00
108	Nipples	each	155.00
109	Pre-packed polymer concrete based on epoxy system complete with curing compound, initiator and promoter including 5 per cent wastage.	kg	17.00
110	Epoxy resin-hardener mix for prime coat	kg	1804.00

Sr. No.	Description	Unit	Av. Rate
111	Epoxy mortar	kg	2738.00
112	Epoxy resin -hardener mix for seal coat.	kg	1784.00
113	Quick setting compound	kg	106.00
114	Acrylic polymer bonding coat	Litre	289.00
115	pre-packed cement based polymer mortar of strength 45 Mpa at 28 days	kg	17.00
116	Epoxy resin with pot life not less than 60-90 minutes and satisfying testing as per clause 2803.9	kg	1796.00
117	HTS strand including 5 per cent wastage and extra length for jacking	tonne	138583.00
118	HDPE pipes 90 mm dia including 5 per cent wastage	metre	264.00
119	HDPE pipes 75mm dia including 5 per cent wastage	metre	218.00
120	Tube anchorage set complete with bearing plate, permanent wedges etc	each	481.00
121	MS plates for deviator (where deviator blocks are not provided)	tonne	58919.00
122	v) Wooden packing	cum	57606.00
123	MS Bolt and nuts	kg	8590.00
124	Polyester trinagular synthetic fibres	kg	427.00
125	Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	sqm	189.00
126	Permeable synthetic geotextile including 5 per cent for overlap and wastage	sqm	178.00
127	4mm GI wire crates woven in mesh size of 100 mm x 100 mm.	sqm	191.00
128	Admixture @ 0.4 per cent of cement	kg	160.00
129	H.T. Strand @ 9.42 kg/m including 2 per cent for wastage and extra length for jacking	tonne	138583.00
130	Sheathing duct ID 66 mm along with 5 per cent extra length $40 \times 1.05 = 42$ m.	metre	245.00
131	i) Bitumen 80/100 or 60/70 or 30/40 @ 10.2 per cent by weight of mix. $2 \times 10.2/100 = 0.204$	tonne	52236.00
132	ii) Crusher stone dust @ 31.9 per cent by weight of mix = $2 \times 31.9/100 = 0.638$ tonnes = $0.638/1.625 = 0.39$	cum	410.00
133	Lime stone dust filler with calcium carbonate content not less than 80 per cent by weight @ 17.92 per cent by weight of mix = $2 \times 17.92/100 = 0.36$	tonne	7715.00
134	Pre-coated stone chips of 9.5 mm nominal size for skid resistance = $72.46 \times 0.005/10 = 0.036$	cum	1100.00
135	Corrosion resistant Structural steel including 5 per cent wastage	Kg	115.00
136	GI pipe 100mm dia	metre	788.00
137	GI bolt 10 mm Dia	each	9.00
138	Galvanised MS flat clamp	each	176.00
139	LDO for steam curing	Litre	59.00
140	Helical pipes 600mm diameter	metre	6927.00

Sr. No.	Description	Unit	Av. Rate
141	Tie rods 20mm diameter	each	119.00
142	Galvanised M.S plate 200 mm wide,12 mm thick @ 94.20 kg/sqm including 5 per cent wastage	kg	78.00
143	Copper plate - 12m long x 250 mm wide	kg	834.00
144	20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	405.00
145	Premoulded joint filler 12 m long,20 mm thick and 300 mm deep.	sqm	1807.00
147	Polymer modified bitumen	kg	60.00
148	Galvanised structural steel plate 200 mm wide,6 mm thick, 12 m long (2.4 sqm) @ 47.10 kg/sqm including 5 per cent wastage	kg	103.00
149	Supply of elastomeric slab seal expansion joint assembly manufactured by using chloroprene, elastomer for elastomeric slab unit conforming to clause 915.1 of IRC: 83 (part II), complete as per approved drawings and standard specification conforming to clause 2606 of MoRT&H Specification	metre	8306.00
150	Galvanised angle sections 100mm x 100mm of 12mm thickness weldable structural steel as per IS: 2062, 2 nos. of 12 m length each @ 17.7 kg/m and 5 per cent wastage.	kg	103.00
151	Preformed continuous chloroprene elastomer or closed cell foam sealing element with high tear strength, vulcanised in a single operation for the full length of a joint to ensure water tightness.	metre	19244.00
152	Supply of complete assembly of strip seal expansion joint comprising of edge beams, anchorage, strip seal element and complete accessories as per approved specifications and drawings.	metre	21876.00
153	Supply of a modular strip/box seal joint assembly comprising of edge beams, central beam,2 modules chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative.	metre	24967.00
154	Supply of a modular box/box seal joint assembly containing 3 modules/cells and comprising of edge beams, two central beams, chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative.	metre	30353.00
155	Cast steel rocker bearing assembly of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	73472.00
156	Forged steel roller bearing of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	111803.00
157	PTFE sliding plate bearing assembly of 80 tonnes design load capacity duly painted complete with all its components as per drawing and Technical Specifications	each.	184472.00
158	Elastomeric bearing assembly consisting of 7 layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation, complete with all components as per drawing and Technical Specifications.	each.	91928.00

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

CHAPTER - 1

LOADING, UNLOADING, CARRIAGE, CRUSHING OF MATERIALS AND SETTING OUT

Preamble:

- 1 The rate analysis of loading and unloading of various items include stacking.
- 2 The rate analysis for loading and unloading has been given both by manual and mechanical means. Means of loading/unloading appropriate to the work and site is to be adopted.
- 3 The rate analysis for haulage of materials has been made in terms of tonne-kilometre (t.km) for ease of adoption depending upon the lead in km and load in tonnes.
- 4 The cost of carriage will vary depending upon the riding surface of the road. Provision has accordingly been made considering surfaced roads, unsurfaced gravel roads and katcha tracks.
- 5 Analysis for carriage of materials is exclusive of the loading, unloading and stacking and this has to be added as applicable.
- 6 Carriage of materials if done by boats shall be paid at the same rates as given for carriage of materials by road.

CHAPTER - 1

LOADING, UNLOADING, CARRIAGE CRUSHING OF MATERIALS AND SETTING OUT

Notes:

- 1 Rates are for net quantities after deduction of voids.
- 2 Part of km beyond 1 km will be payable for the full km.

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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1

1.1

Loading and Unloading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by Manual Means

- (i) Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by manual means including a lead upto 30 m

Unit = cum

Taking output = 5.5 cum

a) Labour

Mate	day	0.02	210.00	4.20
Mazdoor (Unskilled)	day	0.50	210.00	105.00

b) Machinery

Truck	hour	0.50	589.00	294.50
				<u>403.70</u>

- c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

50.46

454.16

Add 1% labour cess on a+b+c.

4.54

Cost for 5.5 cum =

458.70

Rate per cum =

83.40

Say Rs. 83.00

- (ii) Loading of Earth, Sand, Moorum, Manure, Flyash by manual means including a lead upto 30 m

Unit = cum

Taking output = 5.5 cum

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

a) Labour

Mate	day	0.01	210.00	2.10
Mazdoor (Unskilled)	day	0.25	210.00	52.50

b) Machinery

Truck	hour	0.25	589.00	147.25
				<u>201.85</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

25.23

227.08

Add 1% labour cess on a+b+c.

2.27

Cost for 5.5 cum = a+b+c+d

229.35

Rate per cum = (a+b+c+d)/5.5

41.70

Say Rs. 42.00

(iii) Unloading lime aggregate, stone boulder, brick aggregate, kankar, building rubbish, crushed slag, stone for masonry work by manual means including a lead upto 30 m

Unit = cum

Taking output = 5.5 cum

a) Labour

Mate	day	0.01	210.00	2.10
Mazdoor (Unskilled)	day	0.25	210.00	52.50

b) Machinery

Truck	hour	0.25	589.00	147.25
				<u>201.85</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

25.23

227.08

Add 1% labour cess on a+b+c.

2.27

Cost for 5.5 cum =

229.35

Rate per cum =

41.70

Say Rs. 42.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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(iv) Unloading of Earth, Sand, Moorum, Manure, Flyash by manual means including a lead upto 30 m

Unit = cum

Taking output = 5.5 cum

a) Labour

Mate	day	0.005	210.00	1.05
Mazdoor (Unskilled)	day	0.125	210.00	26.25

b) Machinery

Truck	hour	0.166	589.00	97.77
				<u>125.07</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

15.63
140.71

Add 1% labour cess on a+b+c.

1.41

Cost for 5.5 cum =

142.12

Rate per cum =

25.84

Say Rs. 26.00

2 1.2

Loading and Unloading Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by Mechanical Means

(i) Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by mechanical means including a lead upto 30 m Placing tipper at loading point, loading with front end loader excluding time for haulage and return trip.

Unit = cum

Taking output = 5.5 cum

Time required for

i) Positioning of tipper at loading point Min 1.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

ii) Loading by front end loader 1 cum bucket capacity @ 45 cum per hour

Min 7.33

iii) Waiting time, unforeseen contingencies, etc.

Min 2.00

Total
a) Machinery

Min 10.33

(i) Tipper 10 t capacity

hour 0.172 513.00 88.24

(ii) Front end-loader 1 cum bucket capacity @ 45 cum per hour

hour 0.122 1,321.00 161.16
249.40

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

31.17
280.57

Add 1% labour cess on a+b+c.

2.81

Cost for 5.5 cum = a+b+c

283.38

Rate per cum = (a+b+c) /5.5

51.52

Say Rs. 52.00

(ii) Loading of Earth, Sand, Moorum, Manure, Flyash by mechanical means including a lead upto 30 m.

Placing tipper at loading point, loading with front end loader excluding time for haulage and return trip.

Unit = cum

Taking output = 5.5 cum

Time required for

i) Positioning of tipper at loading point

Min 1.00

ii) Loading by front end loader 1 cum bucket capacity @ 100 cum per hour

Min 3.30

iii) Waiting time, unforeseen contingencies, etc.

Min 2.00

Total
a) Machinery

Min 6.30

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

(i)	Tipper 10 t capacity	hour	0.105	513.00	53.87
(ii)	Front end-loader 1 cum bucket capacity @ 100 cum per hour	hour	0.055	1,321.00	72.66
					<hr/>
					126.52

c)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				
					<hr/>
					15.82
					<hr/>
					142.34

Add 1% labour cess on a+b+c.					<hr/>
					1.42
Cost for 5.5 cum = a+b+c					<hr/>
					143.76
Rate per cum =					<hr/>
					26.14

Say Rs. 26.00

(iii) Unloading of Earth, Sand, Lime, Moorum, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Manure, Crushed Slag, Flyash, Stone for Masonry Work by mechanical means.

Unit = cum

Taking output = 5.5 cum

Placing tipper at unloading point excluding time for haulage and return trip

Time required for

i)	Positioning of tipper at unloading point	Min	1.00
ii)	Manoeuvring, reversing, dumping and turning for return	Min	2.00
iii)	Waiting time, unforeseen contingencies, etc.	Min	2.00

Total Min 5.00

a) Machinery					
Tipper 10 t capacity	hour	0.08	513.00	<hr/>	41.04
					41.04

b)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a)				
					<hr/>
					5.13
					<hr/>
					46.17

Add 1% labour cess on a+b.					<hr/>
					0.46
Cost for 5.5 cum					<hr/>
					46.63
Rate per cum =					<hr/>
					8.48

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Say Rs. 8.00

3

1.3

Loading, Unloading and Stacking of Bricks by Manual Means

(i) Loading of Bricks by manual means including a lead upto 30 m

Unit = 1000 Nos.

Taking output = 2000 Nos.

a) Labour

Mate	day	0.01	210.00	2.10
------	-----	------	--------	------

Mazdoor (Unskilled)	day	0.25	210.00	52.50
---------------------	-----	------	--------	-------

b) Machinery

Truck	hour	0.33	589.00	194.37
				248.97

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

31.12

280.09

Add 1% labour cess on a+b+c.

2.80

Cost for 2000 Nos. = 282.89

Rate for 1000 bricks = 141.45

Say Rs. 141.00

(ii) Unloading and Stacking of Bricks by manual means including a lead upto 30 m

Unit = 1000 Nos.

Taking output = 2000 Nos.

a) Labour

Mate	day	0.01	210.00	2.10
------	-----	------	--------	------

Mazdoor (Unskilled)	day	0.25	210.00	52.50
---------------------	-----	------	--------	-------

b) Machinery

Truck	hour	0.33	589.00	194.37
				248.97

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

31.12

280.09

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

Add 1% labour cess on a+b+c.							2.80
Cost for 2000 Nos. =							282.89
Rate for 1000 bricks =							141.45

Say Rs. 141.00

4 1.4

Loading and Unloading of Cement by Manual Means

(i) Loading of Cement by manual means including a lead upto 30 m

Unit = t

Taking output = 10 t

a) Labour

Mate	day	0.06	210.00	12.60
Mazdoor (Unskilled)	day	1.50	210.00	315.00

b) Machinery

Truck	hour	1.00	589.00	589.00
				916.60

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

114.58
1,031.18

Add 1% labour cess on a+b+c.							10.31
------------------------------	--	--	--	--	--	--	-------

Cost for 10 t = 1,041.49

Rate per tonnes = 104.15

Say Rs. 104.00

(ii) Unloading of Cement by manual means including a lead upto 30 m

Unit = t

Taking output = 10 t

a) Labour

Mate	day	0.06	210.00	12.60
Mazdoor (Unskilled)	day	1.50	210.00	315.00

b) Machinery

Truck	hour	1.00	589.00	589.00
				916.60

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

114.58

1,031.18

Add 1% labour cess on a+b+c.

10.31

Cost for 10 t =

1,041.49

Rate per tonne =

104.15

Say Rs. 104.00

5 1.5

Loading and Unloading of Structural Steel and Steel Bars by manual means

(i) Loading of Structural Steel, Steel Bars by manual means including a lead upto 30 m

Unit = t

Taking output = 10 t

a) Labour

Mate day 0.07 210.00 14.70

Mazdoor (Unskilled) day 1.80 210.00 378.00

b) Machinery

Truck hour 1.00 589.00 589.00

981.70

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

122.71

1,104.41

Add 1% labour cess on a+b+c.

11.04

Cost for 10 t =

1,115.46

Rate per tonnes =

111.55

Say Rs. 112.00

(ii) Unloading of Structural Steel, Steel Bars by manual means including a lead upto 30 m

Unit = t

Taking output = 10 t

a) Labour

Mate day 0.07 210.00 14.70

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Mazdoor (Unskilled)	day	1.80	210.00	378.00
			b) Machinery				
			Truck	hour	1.00	589.00	589.00
							<u>981.70</u>
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				122.71
							<u>1,104.41</u>
			Add 1% labour cess on a+b+c.				11.04
							<u>1,115.46</u>
			Cost for 10 t =				111.55
			Rate per t =				
							Say Rs. 112.00

6 1.6

Loading and Unloading of Bitumen Drums by Manual Means

(i) Loading of Bitumen Drums by manual means including a lead upto 30 m

Unit = t

Taking output = 10 t

a) Labour

Mate	day	0.06	210.00	12.60
Mazdoor (Unskilled)	day	1.60	210.00	336.00

b) Machinery

Truck	hour	1.25	589.00	736.25
				<u>1,084.85</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

135.61
1,220.46

Add 1% labour cess on a+b+c.

12.20

Cost for 10 t =

1,232.66

Rate per t =

123.27

Say Rs. 123.00

(ii) Unloading of Bitumen Drums by Manual Means including a lead upto 30 m

Unit = t

Taking output = 10 t

a) Labour

Mate	day	0.05	210.00	10.50
------	-----	------	--------	-------

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

Mazdoor (Unskilled)	day	1.20	210.00	252.00
---------------------	-----	------	--------	--------

b) Machinery

Truck	hour	1.25	589.00	736.25
				998.75

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

124.84

1,123.59

Add 1% labour cess on a+b+c.

11.24

Cost for 10 t =

1,134.83

Rate per t =

113.48

Say Rs. 113.00

Note: The rate is inclusive of the self weight of drum

7 1.7 100

Loading and Unloading of Timber by Manual Means

(i) Loading of Timber by manual means including a lead upto 30 m

Unit = t

Taking output = 5 t

a) Labour

Mate	day	0.04	210.00	8.40
------	-----	------	--------	------

Mazdoor (Unskilled)	day	1.00	210.00	210.00
---------------------	-----	------	--------	--------

b) Machinery

Truck	hour	1.00	589.00	589.00
				807.40

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

100.93

908.33

Add 1% labour cess on a+b+c.

9.08

Cost for 5 t =

917.41

Rate per t =

183.48

Say Rs. 183.00

(ii) Unloading of Timber by manual means including a lead upto 30 m

Unit = t

Taking output = 5 t

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

a) Labour

Mate	day	0.04	210.00	8.40
Mazdoor (Unskilled)	day	1.00	210.00	210.00

b) Machinery

Truck	hour	1.00	589.00	589.00
				<u>807.40</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

100.93

908.33

Add 1% labour cess on a+b+c.

9.08

Cost for 5 t =

917.41

Rate per t =

183.48

Say Rs. 183.00

Note: Density of wood has been assumed as 900 kg per cum. If the density is less the output may be reduced proportionately

8 1.8

Loading and Unloading of C.C. Blocks, Kerb, etc.

(i) Loading with care C.C. Blocks, km Stone, 200 m Stone, Boundary Pillar, Kerb, Channel, Bond Stone, etc. by manual means including a lead upto 30 m

Unit = cum

Taking output = 5.5 cum

a) Labour

Mate	day	0.08	210.00	16.80
Mazdoor (Unskilled)	day	2.00	210.00	420.00

b) Machinery

Truck	hour	1.50	589.00	883.50
				<u>1,320.30</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

165.04

1,485.34

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

Add 1% labour cess on a+b+c.							14.85
Cost for 5.5 cum =							1,500.19
Rate per cum =							272.76

Say Rs. 273.00

- (ii) Unloading with care C.C. Blocks, km Stone, 200 m Stone, Boundary Pillar, Kerb, Channel, Bond Stone, etc. by manual means including a lead upto 30 m
Unit = cum
Taking output = 5.5 cum

a) Labour

Mate	day	0.08	210.00	16.80
Mazdoor (Unskilled)	day	2.00	210.00	420.00

b) Machinery

Truck	hour	1.50	589.00	883.50
				1,320.30

- c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

						165.04
						1,485.34
Add 1% labour cess on a+b+c.						14.85
Cost for 5.5 cum =						1,500.19
Rate per cum =						272.76

Say Rs. 273.00

9 1.9

Loading and Unloading of Hume Pipes

- (i) Loading of RCC Hume pipes by mechanical means including a lead upto 30 m

A. 900/1000 / 1200 mm dia Hume pipe

Unit = per pipe
Taking output = 9 pipes

a) Labour

Mate	day	0.02	210.00	4.20
Mazdoor (Unskilled)	day	0.50	210.00	105.00

b) Machinery

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

Truck	hour	0.33	589.00	194.37
Crane	hour	0.33	916.00	302.28
				<u>605.85</u>

- c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

75.73

681.58

Add 1% labour cess on a+b+c.

6.82

Cost for 9 pipes =

688.40

Rate per pipe =

76.49

Say Rs. 76.00

B. 750 mm dia Hume pipe

Unit = per pipe

Taking output = 15 pipes

a) Labour

Mate	day	0.02	210.00	4.20
Mazdoor (Unskilled)	day	0.50	210.00	105.00

b) Machinery

Truck	hour	0.33	589.00	194.37
Crane	hour	0.33	916.00	302.28
				<u>605.85</u>

- c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

75.73

681.58

Add 1% labour cess on a+b+c.

6.82

Cost for 15 pipes =

688.40

Rate per pipe =

45.89

Say Rs. 46.00

C. 600/500/300 mm dia Hume pipe

Unit = per pipe

Taking output = 21 pipe

a) Labour

Mate	day	0.02	210.00	4.20
Mazdoor (Unskilled)	day	0.50	210.00	105.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

b) Machinery

Truck	hour	0.33	589.00	194.37
Crane	hour	0.33	916.00	302.28
				<hr/> 605.85

- c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

75.73
681.58

Add 1% labour cess on a+b+c.

6.82

Cost for 21 pipes =

688.40

Rate per pipe =

32.78

Say Rs. 33.00

- (ii) Unloading of RCC Hume pipe by manual means including a lead upto 30 m

A. 900/1000/1200 mm dia RCC Hume pipes

Unit = per pipe

Taking output = 5 pipes

a) Labour

Mate	day	0.04	210.00	8.40
Mazdoor (Unskilled)	day	1.00	210.00	210.00

b) Machinery

Truck	hour	2.00	589.00	1,178.00
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c) Material

Wooden sleepers 250mm x 250mm x125mm hire charges 3 nos sleeper	hour	2.00	25.00	50.00
Crow bars 2 nos not less than 40 mm dia (hire-charges)	hour	2.00	1.00	2.00
				<hr/> 1,448.40

- d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

181.05
1,629.45

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

Add 1% labour cess on a+b+c. 16.29
 Cost for 5 pipes = 1,645.74
 Rate per pipe = 329.15
Say Rs. 329.00

B. 750 mm dia Hume pipe

Unit = per pipe
 Taking output = 6 pipes

a) Labour

Mate	day	0.04	210.00	8.40
Mazdoor (Unskilled)	day	1.00	210.00	210.00

b) Machinery

Truck	hour	2.00	589.00	1,178.00
-------	------	------	--------	----------

c) Materials

Wooden sleepers 250mm x 250mm x 125mm hire charges 3 nos. sleeper	hour	2.00	25.00	50.00
Crow bars 2 nos not less than 40 mm dia	hour	2.00	1.00	2.00
				1,448.40

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b) 181.05
1,629.45

Add 1% labour cess on a+b+c. 16.29
 Cost for 6 pipes = 1,645.74
 Rate per pipe = 274.29

Say Rs. 274.00

C. 600/500/300 mm dia Hume pipe

Unit = per pipe

Taking output = 8 pipes

a) Labour

Mate	day	0.04	210.00	8.40
Mazdoor (Unskilled)	day	1.00	210.00	210.00

b) Machinery

-

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

			Truck	hour	2.00	589.00	1,178.00
			c) Materials			-	
			Wooden sleepers 250mm x 250mm x 125mm hire charges 3 nos. sleeper	hour	2.00	25.00	50.00
			Crow bars 2 nos not less than 40 mm dia	hour	2.00	1.00	2.00
							<hr/> 1,448.40
d)			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				<hr/> 181.05
							<hr/> 1,629.45
			Add 1% labour cess on a+b+c.				<hr/> 16.29
			Cost for 8 pipes =				<hr/> 1,645.74
			Rate per pipe =				<hr/> 205.72

Say Rs. 206.00

(iii) Unloading of RCC Hume pipes by mechanical means including a lead upto 30 m

A. 900/1000/1200 mm dia Hume pipe

Unit = per pipe

Taking output = 9 pipes

a) Labour

Mate	day	0.02	210.00	4.20
Mazdoor (Unskilled)	day	0.50	210.00	105.00

b) Machinery

Truck	hour	0.20	589.00	117.80
Crane	hour	0.20	916.00	183.20
				<hr/> 410.20

d)			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				<hr/> 51.28
							<hr/> 461.48
			Add 1% labour cess on a+b+c.				<hr/> 4.61
			Cost for 9 pipes =				<hr/> 466.09

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Rate per pipe = 51.79

Say Rs. 52.00

B. 750 mm dia Hume pipe

Unit = per pipe
Taking output = 15 pipes

a) Labour

Mate	day	0.02	210.00	4.20
Mazdoor (Unskilled)	day	0.50	210.00	105.00

b) Machinery

Truck	hour	0.20	589.00	117.80
Crane	hour	0.20	916.00	183.20
				<u>410.20</u>

- d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

51.28

461.48

Add 1% labour cess on a+b+c.

4.61

Cost for 15 pipes =

466.09

Rate per pipe =

31.07

Say Rs. 31.00

C. 600/500/300 mm dia Hume pipe

Unit = per pipe
Taking output = 21 pipes

a) Labour

Mate	day	0.02	210.00	4.20
Mazdoor (Unskilled)	day	0.50	210.00	105.00

b) Machinery

Truck	hour	0.20	589.00	117.80
Crane	hour	0.20	916.00	183.20
				<u>410.20</u>

- d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

51.28

461.48

Add 1% labour cess on a+b+c.

4.61

Cost for 21 pipes =

466.09

Rate per pipe =

22.19

Say Rs. 22.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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10 **1.10**

Haulage excluding Loading & Unloading

Haulage of materials by tipper excluding cost of loading, unloading and stacking.

Unit = t.km

Taking output 10 t load and lead

10 km = 100 t.km

Case-I : Surfaced Road

Speed with load: 25 km per hour

Speed while returning empty: 35 km per hour

a) Machinery

Tipper 10 t capacity

Haulage with load	hour	0.40	513.00	205.20
Empty return trip	hour	0.29	513.00	148.77
				<u>353.97</u>

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

44.25

398.22

Add 1% labour cess on a+b+c.

3.98

Cost for 100 t.km =

402.20

Rate per t.km =

4.02

Say Rs. 4.00

Case-II: Unsurfaced Gravel Road

Speed with load: 20 km/hour

Speed for empty return trip: 30 km/hour

a) Machinery

Tipper 10 t capacity

Haulage with load	hour	0.50	513.00	256.50
Empty return trip	hour	0.33	513.00	169.29
				<u>425.79</u>

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

53.22

479.01

Add 1% labour cess on a+b+c.

4.79

Cost for 100 t.km =

483.80

Rate per t.km =

4.84

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Say Rs. 5.00

Case-III: Katcha Track and Track in River Bed/Nallah Bed

Speed with load: 10 km per hour

Speed while returning empty: 15 km per hour

a) Machinery

i) Tipper 10 t capacity

Haulage with load	hour	1.00	513.00	513.00
Empty return trip	hour	0.67	513.00	343.71
				<hr/> 856.71

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

107.09

963.80

Add 1% labour cess on a+b+c.

9.64

Cost for 100 t.km = a+b+c

973.44

Rate per t.km = (a+b+c)/100

9.73

Say Rs. 10.00

11 1.11

Haulage excluding Loading & Unloading

Haulage of materials by truck excluding cost of loading, unloading and stacking.

1) Hume pipe 900/1000/1200 mm dia

Unit =per pipe

Taking output 8 t load and lead 10 km = 9 pipes

Case-I : Surfaced Road

Speed with load: 25 km per hour

Speed while returning empty: 35 km per hour

a) Machinery

Truck 8 t capacity

Haulage with load	hour	0.40	513.00	205.20
Empty return trip	hour	0.29	513.00	148.77
				<hr/> 353.97

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

44.25

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

398.22

Add 1% labour cess on a+b+c.						3.98	
Cost for 9 pipe =							402.20
Rate per pipe =							44.69
Say Rs. 45.00							

Haulage excluding Loading & Unloading

Haulage of materials by truck excluding cost of loading, unloading and stacking.

II) Hume pipe 750 mm dia

Unit =per pipe

Taking output 8 t load and lead 10 km = 15 pipes

Case-I : Surfaced Road

Speed with load: 25 km per hour

Speed while returning empty: 35 km per hour

a) Machinery

Truck 8 t capacity

Haulage with load	hour	0.40	513.00	205.20
Empty return trip	hour	0.29	513.00	148.77
				353.97

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

44.25

398.22

Add 1% labour cess on a+b+c.						3.98	
Cost for 15 pipe =							402.20
Rate per pipe =							26.81
Say Rs. 27.00							

III) Hume pipe 600/500/300 mm dia

Unit =per pipe

Taking output 8 t load and lead 10 km = 21 pipes

Case-I : Surfaced Road

Speed with load: 25 km per hour

Speed while returning empty: 35 km per hour

a) Machinery

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

Truck 8 t capacity

Haulage with load	hour	0.40	513.00	205.20
Empty return trip	hour	0.29	513.00	148.77
				<hr/> 353.97

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

44.25
398.22

Add 1% labour cess on a+b+c.

3.98

Cost for 21 pipe =

402.20

Rate per pipe =

19.15

Say Rs. 19.00

Case-II: Unsurfaced Gravel Road

Speed with load: 20 km/hour

Speed for empty return trip: 30 km/hour

Taking output 8 t load and lead 10 km=9 pipe

I) Hume pipe 900/1000/1200 mm dia

a) Machinery

Truck 8 t capacity

Haulage with load	hour	0.50	513.00	256.50
Empty return trip	hour	0.33	513.00	169.29
				<hr/> 425.79

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

53.22
479.01

Add 1% labour cess on a+b+c.

4.79

Cost for 9 pipe =

483.80

Rate per pipe =

53.76

Say Rs. 54.00

Taking output 8 t load and lead 10 km=15 pipe

II) Hume pipe 750 mm dia

a) Machinery

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Truck 8 t capacity

	Haulage with load	pipe/km	0.50	513.00	256.50
	Empty return trip	pipe/km	0.33	513.00	169.29
					<hr/> 479.79
b) d)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a)				<hr/> 59.97
					<hr/> 539.76
	Add 1% labour cess on a+b.				<hr/> 5.40
	Cost for 15 pipe =				545.16
	Rate per pipe =				36.34

Say Rs. 36.00

Taking output 8 t load and lead 10 km=21 pipe
 III) Hume pipe 600/500/300 mm dia

a) Machinery

Truck 8 t capacity

	Haulage with load	pipe/km	0.50	513.00	256.50
	Empty return trip	pipe/km	0.33	513.00	169.29
					<hr/> 461.79
b)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a)				<hr/> 57.72
					<hr/> 519.51
	Add 1% labour cess on a+b.				<hr/> 5.20
	Cost for 21 pipe = a+b+c				524.71
	Rate per pipe = (a+b+c)/21				24.99

Say Rs. 25.00

Case-III: Katcha Track and Track in River Bed/Nallah Bed and Choe Bed

Speed with load: 10 km per hour
 Speed while returning empty: 15 km per hour

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
---------	------------------------	----------------------------------	-------------	------	----------	------------	--------------

Taking output 8 t load and lead 10 km=9 pipe

I) Hume pipe 900/1000/1200 mm dia

a) Machinery

Truck 8 t capacity

Haulage with load	pipe/km	1.00	513.00	513.00
Empty return trip	pipe/km	0.67	513.00	343.71
				<hr/> 856.71

b)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a)	<hr/> 107.09
		<hr/> 963.80

Add 1% labour cess on a+b.				<hr/> 9.64
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Cost for 9 pipe = 973.44

Rate per pipe = 108.16

Say Rs. 108.00

Taking output 8 t load and lead 10 km=15 pipe

II) Hume pipe 750 mm dia

a) Machinery

Truck 8 t capacity

Haulage with load	pipe/km	1.00	513.00	513.00
Empty return trip	pipe/km	0.67	513.00	343.71
				<hr/> 964.71

b)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a)	<hr/> 120.59
		<hr/> 964.71

Add 1% labour cess on a+b.				<hr/> 9.65
----------------------------	--	--	--	------------

Cost for 15 pipe = 974.36

Rate per pipe = 64.96

Say Rs. 65.00

Taking output 8 t load and lead 10 km=21 pipe

III) Hume pipe 600/500/300 mm dia

a) Machinery

Truck 8 t capacity

Haulage with load	pipe/km	1.00	513.00	513.00
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Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Empty return trip	pipe/km	0.67	513.00	343.71
							<u>921.71</u>
		b)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a)				115.21
							<u>921.71</u>
			Add 1% labour cess on a+b.				9.22
			Cost for 21 pipe =				<u>930.93</u>
			Rate per pipe =				44.33
						Say Rs. 44.00	

Chapter – 2

SITE CLEARANCE

Preamble:

- 1 Unless otherwise stated, the rates include sorting and disposal of unserviceable material and stacking of serviceable material with all lifts and upto a lead of 1000 m.
- 2 The rates include Tools & Plants (T&P) and scaffolding required for items of dismantling.
- 3 Carriage of dismantled materials, bushes, branches of tree, etc. has been catered with a tractor-trolley of 3 tonnes capacity with manual loading and unloading @ 2 trips per hour within a lead of 1000 m. This will be economical for such works as compared with a tipper.
- 4 Where only grass wild growth is met with, rate of item No.2.1, i.e., clearing grass and removal of rubbish can be applied.
- 5 The dismantling of structures has been catered both by manual and mechanical means. The Engineer can use his discretion depending upon quantum of work and particular site conditions.
- 6 Rate analysis for removing of stumps and roots has also been provided separately.
- 7 Dismantling of Hume pipes has been catered manually as pipes can be easily rolled by men to a suitable stacking place within the right-of-way.
- 8 For dismantling of structures, which remain submerged in water, the cost may be enhanced by 50 per cent. If site conditions warrant lowering of water level to facilitate dismantling, the cost may be enhanced by additional 25 per cent.
- 9 Dismantling of utilities, like, water supply lines, electric and telephone lines is required to be done under the supervision of concerned departments with prior information to the user public.
- 10 In certain items of dismantling, like, pipe culverts, utilities, etc. excavation in earth and dismantling of masonry works is not included in this analysis for which suitable notes have been inserted in respective Chapters. These items are required to be priced separately based on actual quantities at site and nature of work.
- 11 The dismantled materials should be examined and a realistic assessment and provision should be made after due process for the salvage value for such materials, which can be utilized for works or auctioned.
- 12 In case where lead for disposal is more than 1000 m, extra cost of carriage is required to be added based on tonne-kilometerage as per Chapter 1 for the purpose of justification.
- 13 All minor Tools & Plants (T&P) items required for dismantling have been considered to have been included in overhead charges.

Chapter – 2 SITE CLEARANCE

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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12 2.2 201 **Clearing and Grubbing Road Land**

Clearing and grubbing road land including uprooting wild vegetation, grass, bushes, shrubs, saplings and trees of girth upto 300 mm, removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per Technical Specification Clause 201.

(I) By Mechanical Means

(A) In area of non-thorny jungle

a) Labour

Mate	day	0.16	210.00		33.60
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Mazdoor (Unskilled)	day	4.00	210.00		840.00
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b) Machinery

Dozer D 50 with attachment or suitable machinery for removal of trees & stumps	hour	10.00	6,285.00		62,850.00
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Tractor with Trolley	hour	1.00	581.00		581.00
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64,304.60

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

8,038.08

72,342.68

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Add 1% labour cess on a+b+c.							723.43
Rate per hectare =							<u>73,066.10</u>

Say Rs. 73,066.00

(B) In area of thorny jungle

a) Labour

Mate	day	0.24	210.00	50.40
Mazdoor (Unskilled)	day	6.00	210.00	1,260.00

b) Machinery

Dozer D 50 with attachment for removal of trees & stumps	hour	12.00	6,285.00	75,420.00
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Tractor with trolley	hour	1.50	581.00	871.50
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77,601.90

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

9,700.24

87,302.14

Add 1% labour cess on a+b+c.

873.02

Rate per hectare =

88,175.16

Say Rs. 88,175.00

Chapter – 3

EARTHWORK, EROSION CONTROL AND DRAINAGE

Preamble:

- 1 The rates have been analysed using mechanical means. Manual means for certain items have also been provided which can be used for areas inaccessible to machines and also for small jobs.
- 2 In the rate analyses of earthwork, compacted volume of earth has been considered.
- 3 Cutting of earth by dozer has been proposed where the cut earth can be utilized for filling for embankment within a lead upto 100 m.
- 4 Where lead for transporting of earth is more than 100 m, excavator and tipper have been provided.
- 5 The rate caters for disposal of unsuitable soil only upto a distance of 1 km. The cost of transportation beyond the initial lead of 1 km will be paid separately based on tonne-kilometerage for the purpose of justification.
- 6 The replacement of unsuitable soil by suitable soil shall be provided separately in the estimate. The rate analysis for removal of unsuitable soil does not provide for replacement by suitable soil.
- 7 In cases where embankment is constructed with earth taken from roadway, the cost of depositing the earth at the site of embankment is already included in the disposal of excavated earth and, therefore, the input of dozer for spreading earth can be deleted.
- 8 For narrow and restricted areas, plate compactor has been proposed for compaction to achieve the desired density.
- 9 In case excavated rock is found suitable for incorporation in works, suitable credit for the available rock shall be given.
- 10 For excavation of structures refer to Chapter 11 dealing with items of Foundation.
- 11 The possibility of using the blasted rock fragments for backfilling behind structures or backfilling of foundation pits or filling in medians/separators or use in service road shall be examined before proposing disposal of excavated rock.
- 12 For inhabited areas, controlled blasting with limited charges of explosives has been provided. This involves smaller drill holes and additional requirement of electric detonators. Provision has been made accordingly.
- 13 Any work involved for crossing of water courses for irrigation purpose, etc. will be priced under respective items, like, excavation, grubbing, clearing, etc. for which rate analysis have separately been made.
- 14 Earth excavated from drains can be used in roadway berms. Hence carriage for disposal of same is not provided.
- 15 In case of rock fill embankment, it is assumed that material is available at site from rock cutting.
- 16 For widening of existing pavement less than 1.8 m, the rates for all items of this Chapter may be increased by 30 per cent.

Chapter – 3

EARTHWORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
13	3.4	301.5	Construction of Embankment with Material Obtained from Borrow Pits Construction of embankment with approved material obtained from borrow pits with a lift upto 1.5 m, transporting to site, spreading, grading to required slope and compacting to meet requirement of Tables 300.1 and 300.2 with a lead upto 1000 m as per Technical Specification Clause 301.5 Unit = cum Taking output = 100 cum				
			a) Labour				
			Mate	day	0.04	210.00	8.40
			Mazdoor (Unskilled)	day	1.00	210.00	210.00
			b) Machinery				
			Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	1.67	1,843.00	3,077.81
			Tipper 5.5 cum with 10 t capacity	hour	4.50	513.00	2,308.50
			Loading of earth as per item 1.1 (ii)	cum	100.00	42.00	4,200.00
			Unloading of earth as per item 1.1 (iv)	cum	100.00	26.00	2,600.00
			Dozer D-50 for spreading @ 200 cum per hour	hour	0.50	6,285.00	3,142.50
			Motor grader for grading @ 200 cum per hour	hour	0.50	2,230.00	1,115.00
			Water tanker 6 kl capacity	hour	2.00	500.00	1,000.00
			Three wheel 80-100 kN Static Roller @ 80 cum per hour	hour	1.25	745.00	931.25
			c) Material				
			Water	kl	12.00	102.00	1,224.00
			Compensation for earth taken from private land	cum	100.00	40.00	4,000.00
							23,817.46
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)				2,977.18
							26,794.64
			e) Add 1% labour cess on a+b+c.				267.95
							27,062.59
			f) Add 1% labour cess on a+b+c+d.				270.63
			Cost for 100 cum = a+b+c+d+e+f				27,333.21

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Rate per cum = (a+b+c+d+e+f)/100				273.33
							Say Rs. 273.00
14	3.14	303.1	Construction of Subgrade and Earthen Shoulders				
Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of Table 300.2 with lead upto 1000 m as per Technical Specification Clause 303.1.							
Unit = cum							
Taking output = 100 cum							
a) Labour							
Mate				day	0.04	210.00	8.40
Mazdoor (Unskilled)				day	1.00	210.00	210.00
b) Machinery							
Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour				hour	1.00	1,843.00	1,843.00
Tipper 5.5 cum capacity, 4 trips per hour				hour	4.50	513.00	2,308.50
Add rate for loading as per item 1.1 (ii)				cum	100.00	36.70	3,670.00
Add rate for unloading as per item 1.1 (iv)				cum	100.00	22.74	2,274.07
Dozer D-50 for spreading @ 200 cum per hour				hour	0.50	6,285.00	3,142.50
Motor grader for grading @ 200 cum per hour				hour	0.50	3,513.00	1,756.50
Water tanker with 6 kl capacity				hour	2.00	500.00	1,000.00
Three wheel 80-100 kN Static Roller @ 70 cum per hour				hour	1.43	791.00	1,131.13
c) Material							
Water				kl	12.00	102.00	1,224.00
Compensation for earth taken from private land				cum	100.00	63.00	6,300.00
							24,868.10
d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)							3,108.51
							27,976.62
e) Add 1% labour cess on a+b+c+d.							279.77
Cost for 100 cum = a+b+c+d+e							28,256.38

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Rate per cum = (a+b+c+d)/100

282.56

Say Rs. 283.00

15 3.15 303 **(ii) Compacting original ground supporting subgrade**

Loosening of the ground upto a level of 300 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of Tables 300.1 and 300.2 for subgrade construction as per Technical Specification Clause 303.5.2.

Unit = cum

Taking output = 600 cum

a) **Labour**

Mate	day	0.24	210.00	50.40
Mazdoor (Unskilled)	day	6.00	210.00	1,260.00

b) **Machinery**

Tractor with ripper attachment	hour	10.00	687.00	6,870.00
Motor grader for grading	hour	6.00	3,513.00	21,078.00
Water tanker 6 kl capacity	hour	4.00	500.00	2,000.00
Three wheel 80-100 kN Static Roller @ 70 cum per hour	hour	8.60	791.00	6,802.60

c) **Material**

Water	kl	24.00	102.00	2,448.00
				<u>40,509.00</u>

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

5,063.63
45,572.63

e) Add 1% labour cess on a+b+c+d.

455.73

Cost for 600 cum = a+b+c+d+e

46,028.35

Rate per cum = (a+b+c+d+e)/600

76.71

Say Rs. 77.00

16 3.15 301.4 **Compacting Original Ground**

(i) Compacting original ground supporting embankment

Loosening, Levelling and Compacting

Unit = cum

Taking output = 600 cum

a) **Labour**

Mate	day	0.08	210.00	16.80
Mazdoor (Unskilled)	day	2.00	210.00	420.00

b) **Machinery**

Tractor with ripper attachment	hour	6.00	687.00	4,122.00
Three wheel 80-100 kN Static Roller	hour	7.50	791.00	5,932.50

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Water tanker 6 kl capacity	hour	4.00	500.00	2,000.00
			c) Material				
			Water	kl	24.00	102.00	2,448.00
							14,939.30
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				1,867.41
							16,806.71
			d) Add 1% labour cess on a+b+c.				168.07
			Cost for 600 cum = a+b+c+d+e+f				16,974.78
			Rate per sqm = (a+b+c+d+e+f)/600				28.29
							Say Rs. 28.00
17	3.19	307	(i) 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. Excavated material to be used in embankment with a lift upto 3m and lead of 50 m (average lead 25 m) as per Technical Specification Clause 307.				
			Unit = m				
			Taking output = 10 m				
			(A) Manual Means				
			a) Labour				
			Mate	day	0.08	210.00	16.80
			Mazdoor (Unskilled)	day	2.00	210.00	420.00
							436.80
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				54.60
							491.40
			d) Add 1% labour cess on a+b+c.				4.91
			Cost for 10 m = a+b+c+d				496.31
			Rate per m = (a+b+c+d)/10				49.63
							Say Rs. 50.00
			(B) Mechanical Means				
			a) Labour				
			Mate	day	0.01	210.00	2.10
			Mazdoor (Unskilled)	day	0.25	210.00	52.50
			b) Machinery				
			Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	0.04	1,843.00	73.72

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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							128.32
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				16.04
							144.36
			d) Add 1% labour cess on a+b+c.				1.44
			Cost for 10 m = a+b+c+d				145.80
			Rate per m = (a+b+c+d)/10				14.58

Say Rs. 15.00

(ii) 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 Technical Specification Clause 307. Excavated material to be used in embankment at site.

Unit = m

Taking output = 10 m

(A) Manual Means

a) Labour

Mate	day	0.12	210.00	25.20
Mazdoor (Unskilled)	day	3.00	210.00	630.00
				655.20

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				81.90
				737.10

d) Add 1% labour cess on a+b+c.				7.37
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Cost for 10 m = a+b+c+d 744.47

Rate per m = (a+b+c+d)/10 74.45

(B) Mechanical Means

Say Rs. 74.45

a) Labour

Mate	day	0.02	210.00	4.20
Mazdoor (Unskilled)	day	0.50	210.00	105.00

b) Machinery

Hydraulic excavator 0.9 cum bucket capacity @ 40 m per hour	hour	0.10	1,843.00	184.30
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293.50

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				36.69
				330.19

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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d) Add 1% labour cess on a+b+c.							3.30
Cost for 10 m = a+b+c+d+e							333.49
Rate per m = (a+b+c+d+e)/10							33.35

Say Rs. 33.00

(iii) Surface Drains in Hard Rock

Rate per m may be worked out based on quantity of hard rock as per design.

For rate of hard rock cutting, refer relevant item in this Chapter

Unit = m

Taking output = 10 m

(A) Manual Means

a) Labour

Mate	day	0.07	210.00	14.70
Mazdoor (Unskilled)	day	0.69	210.00	144.90
Chiseller	day	1.03	210.00	163.43
Blacksmith	day	0.04	315.00	5.93
				328.96

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				41.12
				370.08

d) Add 1% labour cess on a+b+c.				3.70
Cost for 10 m = a+b+c+d				373.78
Rate per m = (a+b+c+d)/10				37.38

Say Rs. 37.00

(B) Mechanical Means

a) Labour

Mate	day	0.10	210.00	21.00
Mazdoor (Unskilled)	day	2.50	210.00	525.00

b) Machinery

Hydraulic excavator 0.9 cum bucket capacity @ 40 m per hour	hour	0.10	1,843.00	184.30
				730.30

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				91.29
				821.59

d) Add 1% labour cess on a+b+c.				8.22
Cost for 10 m = a+b+c+d				829.80
Rate per m = (a+b+c+d)/10				82.98

Say Rs. 83.00

Chapter – 4

GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS

Preamble:

- 1 Quantities of materials provided are approximate and are meant for the purpose of estimating only. Actual quantities shall be as per mix design.
- 2 For construction of sub-base, two alternatives as under have been provided.
 - a. Mix in place method
 - b. Plant mix method
- 3 Construction of shoulders: - Earthen, Hard and Paved shoulders have been considered, the rates applicable are for subgrade, sub-base and different layers of pavement respectively.
- 4 In the case of improvement of subgrade with lime stabilization, soil is assumed to be available at the site and has not been provided for. Only lime has been catered. In the case of lime stabilization of sub-base, soil has been provided to form the sub-base.
- 5 While providing for the rate of materials, detailed local enquires should be made and prevailing market rates ascertained from concerned suppliers in the area keeping in view the location of crushing plants and lead involved.
- 6 The quantities considered in the output are the compacted quantities. The quantities of aggregates provided in the rate analysis under the head material are the uncompacted quantities.
- 7 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 4
GRANULAR SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
18	4.1	401	Granular Sub-base with Well Graded Material (Table 400.1)				
			(A) By Mix in Place Method				
			Construction of granular sub-base by providing well graded material, spreading in uniform layers with Tractor mount grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with smooth wheel roller to achieve the desired density, complete as per Technical Specification Clause 401.				
			(i) For Grading I Material				
			Unit = cum				
			Taking output = 300 cum				
			a) Labour				
			Mate	day	0.48	210.00	100.80
			Mazdoor (Skilled)	day	2.00	210.00	420.00
			Mazdoor (Unskilled)	day	10.00	210.00	2,100.00
			b) Machinery				
			Tractor mount Grader 110	hour	12.00	1,192.00	14,304.00
			@ 25 cum per hour				
			Three wheel 80-100 kN static roller @ 10 cum per hour	hour	30.00	745.00	22,350.00
			Tractor with Rotavator 25 cum per hour	hour	12.00	688.00	8,256.00
			Water tanker 6 kl capacity	hour	5.00	500.00	2,500.00
			c) Material				
			Well graded granular sub-base material as per Table 400.1	cum	360.00	938.00	3,37,680.00
			Water	kl	30.00	102.00	3,060.00
							3,90,770.80
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				48,846.35
							4,39,617.15
			e) Add 1% labour cess on a+b+c+d.				4,396.17
			Cost for 300 cum = a+b+c+d+e				4,44,013.32
			Rate per cum = (a+b+c+d+e)/300				1,480.04
							Say Rs. 1,480.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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(ii) **For Grading II Material**

Unit = cum

Taking output = 300 cum

a) Labour

Mate	day	0.48	210.00	100.80
Mazdoor (Skilled)	day	2.00	210.00	420.00
Mazdoor (Unskilled)	day	10.00	210.00	2,100.00

b) Machinery

Tractor mount Grader 110	hour	12.00	1,192.00	14,304.00
@ 25 cum per hour				
Three wheel 80-100 kN	hour	30.00	745.00	22,350.00
static roller @ 10 cum per hour				
Tractor with Rotavator 25	hour	12.00	688.00	8,256.00
cum per hour				
Water tanker 6 kl capacity	hour	5.00	500.00	2,500.00

c) Material

Well graded granular sub-base material as per Table 400.1	cum	360.00	924.00	3,32,640.00
Water	kl	30.00	102.00	3,060.00
				<u>3,85,730.80</u>

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

48,216.35
4,33,947.15

e) Add 1% labour cess on a+b+c+d.

4,339.47

Cost for 300 cum = a+b+c+d+e

4,38,286.62

Rate per cum =

1,460.96

Say Rs. 1,461.00

(iii) **For Grading III Material**

Unit = cum

Taking output = 300 cum

a) Labour

Mate	day	0.48	259.00	124.32
Mazdoor (Skilled)	day	2.00	210.00	420.00
Mazdoor (Unskilled)	day	10.00	210.00	2,100.00

b) Machinery

Tractor mount Grader 110	hour	12.00	1,192.00	14,304.00
@ 25 cum per hour				
Three wheel 80-100 kN	hour	30.00	741.00	22,230.00
static roller @ 10 cum per hour				
Tractor with Rotavator 25	hour	12.00	688.00	8,256.00
cum per hour				
Water tanker 6 kl capacity	hour	5.00	500.00	2,500.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			c) Material				
			Well graded granular sub-base material as per Table 400.1	cum	360.00	914.00	3,29,040.00
			Water	kl	30.00	102.00	3,060.00
							<u>3,82,034.32</u>
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				<u>47,754.29</u>
							4,29,788.61
			e) Add 1% labour cess on a+b+c+d.				<u>4,297.89</u>
			Cost for 300 cum = a+b+c+d+e				4,34,086.50
			Rate per cum =				1,446.95
							Say Rs. 1,447.00

18	4.1	401	(B) Plant Mix Method				
			Construction of granular sub-base by providing well graded material, mixing in a mechanical mix plant at OMC, carriage of mixed material to work site upto lead of 1000 m spreading in uniform layers with motor grader on prepared surface and compacting with smooth wheel roller to achieve the desired density, complete as per Technical Specification Clause 401				
			(i) For Grading I Material				
			Unit = cum				
			Taking output = 225 cum (450 t)				
			a) Labour				
			Mate	day	0.40	210.00	84.00
			Mazdoor (Skilled)	day	2.00	210.00	420.00
			Mazdoor (Unskilled)	day	8.00	210.00	1,680.00
			b) Machinery				
			Wet mix plant @ 60 t hour capacity per hour		7.50	1,840.00	13,800.00
			Water tanker 6 kl capacity 5 km lead with one trip per hour		4.00	500.00	2,000.00
			Front end loader 0.9 cum bucket capacity 25 cum per hour		9.00	1,281.00	11,529.00
			Tipper 5.5 cum @ 3 trips per hour		13.60	513.00	6,976.80
			Motor grader 110 HP @ 50 cum per hour		4.50	2,318.00	10,431.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Three wheel 80-100 kN static roller 10 cum per hour	hour	22.50	745.00	16,762.50
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c) Material

Well graded granular sub-base material as per Table 400.1

53 mm to 9.5 mm @ 50 per cent	cum	144.00	880.00	1,26,720.00
9.5 mm to 2.36 mm @ 20 per cent	cum	57.00	938.00	53,466.00
2.36 mm below @ 30 per cent	cum	86.40	856.00	73,958.40
Water	kl	24.00	102.00	2,448.00
				3,20,275.70

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

40,034.46
3,60,310.16

e) Add 1% labour cess on a+b+c+d.

3,603.10

Cost for 225 cum = a+b+c+d+e

3,63,913.26

Rate per cum =

1,617.39

Say Rs. 1,617.00

(ii) For Grading II Material

Unit = cum

Taking output = 225 cum (450 t)

a) Labour

Mate	day	0.40	210.00	84.00
Mazdoor (Skilled)	day	2.00	210.00	420.00
Mazdoor (Unskilled)	day	8.00	210.00	1,680.00

b) Machinery

Wet mix plant @ 60 t capacity per hour	hour	7.50	1,840.00	13,800.00
Water tanker 6 kl capacity 5 km lead with one trip per hour	hour	4.00	500.00	2,000.00
Front end loader 0.9 cum bucket capacity 25 cum per hour	hour	9.00	1,281.00	11,529.00
Tipper 5.5 cum, 3 trips per hour	hour	13.60	513.00	6,976.80
Motor grader 110 HP @ 50 cum per hour	hour	4.50	2,318.00	10,431.00
Three wheel 80-100 kN static roller 10 cum output	hour	22.50	741.00	16,672.50

c) Material

Well graded granular sub-base material as per Table 400.1

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			26.5 mm to 9.5 mm @ 35 per cent	cum	100.80	913.00	92,030.40
			9.5 mm to 2.36 mm @ 25 per cent	cum	72.00	883.00	63,576.00
			2.36 mm below @ 40 per cent	cum	115.20	856.00	98,611.20
			Water	kl	24.00	102.00	2,448.00
							3,20,258.90
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				40,032.36
							3,60,291.26
			e) Add 1% labour cess on a+b+c+d.				3,602.91
			Cost for 225 cum = a+b+c+d+e				3,63,894.18
			Rate per cum =				1,617.31
							Say Rs. 1,617.00
			(iii) For Grading III Material				
			Unit = cum				
			Taking output = 225 cum (450 t)				
			a) Labour				
			Mate	day	0.40	210.00	84.00
			Mazdoor (Skilled)	day	2.00	210.00	420.00
			Mazdoor (Unskilled)	day	8.00	210.00	1,680.00
			b) Machinery				
			Wet mix plant @ 60 t hour capacity per hour		7.50	1,840.00	13,800.00
			Water tanker 6 kl capacity 5 km lead with one trip per hour		4.00	500.00	2,000.00
			Front end loader 0.9 cum bucket capacity 25 cum per hour		9.00	1,281.00	11,529.00
			Tipper 5.5 cum, 3 trips per hour		13.60	513.00	6,976.80
			Motor grader 110 HP @ 50 cum per hour		4.50	2,318.00	10,431.00
			Three wheel 80-100 kN static roller 10 cum output		22.50	745.00	16,762.50
			c) Material				
			Well graded granular sub-base material as per Table 400.1				
			9.5 mm to 4.75 mm @ 35 per cent	cum	100.80	883.00	89,006.40
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	36.00	914.00	32,904.00
			2.36 mm below @ 52.5 per cent	cum	151.20	856.00	1,29,427.20

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Water	kl	24.00	102.00	2,448.00
							3,17,468.90
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				39,683.61
							3,57,152.51
			e) Add 1% labour cess on a+b+c+d.				3,571.53
			Cost for 225 cum = a+b+c+d+e				3,60,724.04
			Rate per cum =				1,603.22
							Say Rs. 1,603.00

19	4.2	402	i) Gravel/Soil-Aggregate Base (Table 400.2) Grading A				
			Construction of gravel/soil-aggregate base by providing well graded material, spreading in uniform layers with Tractor mount grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with three wheel 80-100 kN static roller to achieve the desired density, complete as per Technical Specifications Clause 402				
			Unit = cum				
			Taking output = 300 cum				
			a) Labour				
			Mate	day	0.40	210.00	84.00
			Mazdoor (Skilled)	day	2.00	210.00	420.00
			Mazdoor (Unskilled)	day	8.00	210.00	1,680.00
			b) Machinery				
			Tractor mount grader @ 25 cum per hour	hour	12.00	1,192.00	14,304.00
			Three wheel 80-100 kN static roller @ 10 cum per hour	hour	30.00	741.00	22,230.00
			Water tanker 6 kl capacity	hour	5.00	295.00	1,475.00
			Tractor with Rotavator 25 cum per hour	hour	12.00	688.00	8,256.00
			c) Material				
			For well graded granular sub-base materials as per Table 400.2	cum	360.00	920.00	3,31,200.00
			Water	kl	30.00	102.00	3,060.00
							3,82,709.00
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				47,838.63

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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4,30,547.63

- e) Add 1% labour cess on
a+b+c+d.

4,305.48

Cost for 300 cum = a+b+c+d+e

4,34,853.10

Rate per cum = (a+b+c+d+e)/300

1,449.51

Say Rs. 1,450.00

ii) Gravel/Soil-Aggregate Base (Table 400.2) Grading B

Construction of granular sub-base by providing well graded material, spreading in uniform layers with Tractor mount grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with three wheel 80-100 kN static roller capacity to achieve the desired density, complete as per Technical Specification Clause 402

Unit = cum

Taking output = 300 cum

a) Labour

Mate	day	0.40	210.00	84.00
Mazdoor (Skilled)	day	2.00	210.00	420.00
Mazdoor (Unskilled)	day	8.00	210.00	1,680.00

b) Machinery

Tractor mount grader @25 cum per hour	hour	12.00	1,192.00	14,304.00
Three wheel 80-100 kN static roller @ 10 cum per hour	hour	30.00	741.00	22,230.00
Water tanker 6 kl capacity	hour	5.00	500.00	2,500.00
Tractor with Rotavator 25 cum per hour	hour	12.00	688.00	8,256.00

c) Material

For well graded granular sub-base materials as per Table 400.2	cum	360.00	938.00	3,37,680.00
Water	kl	30.00	102.00	3,060.00
				<u>3,90,214.00</u>

- d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

48,776.75

4,38,990.75

- e) Add 1% labour cess on
a+b+c+d.

4,389.91

Cost for 300 cum = a+b+c+d+e

4,43,380.66

Rate per cum = (a+b+c+d+e)/300

1,477.94

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Say Rs. 1,478.00

iii) **Gravel/Soil-Aggregate Base (Table 400.2) Grading C**

Construction of granular sub-base by providing well graded material, spreading in uniform layers with Tractor mount grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with three wheel 80-100 kN static roller capacity to achieve the desired density, complete as per Technical Specification Clause 402

Unit = cum

Taking output = 300 cum

a) **Labour**

Mate	day	0.40	259.00	103.60
Mazdoor (Skilled)	day	2.00	210.00	420.00
Mazdoor (Unskilled)	day	8.00	210.00	1,680.00

b) **Machinery**

Tractor mount grader @ 25 cum per hour	hour	12.00	1,192.00	14,304.00
Three wheel 80-100 kN static roller @ 10 cum per hour	hour	30.00	745.00	22,350.00
Water tanker 6 kl capacity	hour	5.00	500.00	2,500.00
Tractor with Rotavator 25 cum per hour	hour	12.00	688.00	8,256.00

c) **Material**

For well graded granular sub-base materials as per Table 400.2	cum	360.00	946.00	3,40,560.00
Water	kl	30.00	102.00	3,060.00

3,93,233.60

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

49,154.20

4,42,387.80

e) Add 1% labour cess on a+b+c+d.

4,423.88

Cost for 300 cum = a+b+c+d+e

4,46,811.68

Rate per cum = (a+b+c+d+e)/300

1,489.37

Say Rs. 1,489.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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20 4.7 405 **Water Bound Macadam Sub-base/base**

1) WBM Grading 1

Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller in stages to proper grade and camber, applying and brooming, stone screening/binding materials to fill-up the interstices of coarse aggregate, watering and compacting to the required density Grading 1 as per Technical Specification Clause 404.

(A) By Manual Means

Unit = cum

Taking output = 360 cum

a) Labour

Mate	day	10.08	210.00	2,116.80
Mazdoor (Skilled)	day	2.00	210.00	420.00
Mazdoor (Unskilled)	day	250.00	210.00	52,500.00

b) Machinery

Three wheel 80-100 kN static roller @ 10 cum per hour	hour	36.00	741.00	26,676.00
Water tanker 6 kl capacity	hour	24.00	500.00	12,000.00

c) Material (Refer Tables 400.7, 8, 9 and 10)

Aggregate

Grading 1 90 mm to 45 mm @ 1.21 cum per 10 sqm for compacted thickness of 100 mm	cum	435.60	952.00	4,14,691.20
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Stone Screenings

Type A 13.2 mm for Grading 1 @ 0.27 cum per 10 sqm	cum	97.20	1,220.00	1,18,584.00
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Binding Material

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Binding Material @ 0.08 cum per 10 sqm for grading 1 material	cum	28.80	82.00	2,361.60
			Water	kl	144.00	102.00	14,688.00
							<u>6,44,037.60</u>
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				80,504.70
							<u>7,24,542.30</u>
			e) Add 1% labour cess on a+b+c+d.				7,245.42
			Cost for 360 cum = a+b+c+d+e				<u>7,31,787.72</u>
			Rate per cum =				2,032.74
							Say Rs. 2,033.00
			(B) By Mechanical Means				
			Unit = cum				
			Taking output = 360 cum				
			a) Labour				
			Mate	day	0.68	210.00	142.80
			Mazdoor (Skilled)	day	2.00	210.00	420.00
			Mazdoor (Unskilled)	day	15.00	210.00	3,150.00
			b) Machinery				
			Motor grader 110 HP @ 50 cum per hour for spreading	hour	7.20	2,318.00	16,689.60
			Three wheel 80-100 kN static roller @ 10 cum per hour	hour	36.00	741.00	26,676.00
			Water tanker 6 kl capacity	hour	24.00	500.00	12,000.00
			c) Material (Refer Tables 400.7, 8, 9 and 10)				
			Aggregate				
			Grading 1 90 mm to 45 mm @ 1.21 cum per 10 sqm for compacted thickness of 100 mm	cum	435.60	952.00	4,14,691.20
			Stone Screening				
			Type A 13.2 mm for Grading 1 @ 0.27 cum per 10 sqm	cum	97.20	1,220.00	1,18,584.00
			Binding Material				
			Binding Material @ 0.08 cum per 10 sqm for Grading 2 material	cum	28.80	82.00	2,361.60
			Water	kl	144.00	102.00	14,688.00
							<u>6,09,260.40</u>
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				76,157.55
							<u>6,85,417.95</u>

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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e) Add 1% labour cess on
a+b+c+d.

6,854.18

Cost for 360 cum = a+b+c+d+e

6,92,272.13

Rate per cum =

1,922.98

Say Rs. 1,923.00

2) WBM Grading 2

Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with smooth wheel roller 80-100 kN in stages to proper grade and camber, applying and brooming, stone screening/ binding materials to fill-up the interstices of coarse aggregate, watering and compacting to the required density grading 2 as per Technical Specification Clause 405.

(A) By Manual Means

Unit = cum

Taking output = 360 cum

a) Labour

Mate	day	10.08	210.00	2,116.80
Mazdoor (Skilled)	day	2.00	210.00	420.00
Mazdoor (Unskilled)	day	250.00	210.00	52,500.00

b) Machinery

Three wheel 80-100 kN static roller @ 8 cum per hour	hour	45.00	741.00	33,345.00
Water tanker 6 kl capacity	hour	24.00	500.00	12,000.00

c) Material (Refer Tables 400.7, 8, 9 and 10)

Aggregate

Grading 2 63 mm to 45 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.60	999.00	4,35,164.40
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Stone Screening

Type B 11.2 mm for Grading 2 @ 0.20 cum per 10 sqm	cum	96.01	1,213.00	1,16,460.13
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Binding Material

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Binding Material @ 0.06 cum per 10 sqm for Grading 2 material	cum	28.80	82.00	2,361.60
			Water	kl	144.00	45.00	6,480.00
							<u>6,60,847.93</u>
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				82,605.99
							<u>7,43,453.92</u>
			e) Add 1% labour cess on a+b+c+d.				7,434.54
			Cost for 360 cum = a+b+c+d+e				<u>7,50,888.46</u>
			Rate per cum =				2,085.80
							Say Rs. 2,086.00
			(B) By Mechanical Means				
			Unit = cum				
			Taking output = 360 cum				
			a) Labour				
			Mate	day	0.68	210.00	142.80
			Mazdoor (Skilled)	day	2.00	210.00	420.00
			Mazdoor (Unskilled)	day	15.00	210.00	3,150.00
			b) Machinery				
			Motor grader 110 HP @ 50 cum per hour for spreading	hour	7.20	2,318.00	16,689.60
			Three wheel 80-100 kN static roller @ 8 cum per hour	hour	45.00	741.00	33,345.00
			Water tanker 6 kl capacity	hour	24.00	500.00	12,000.00
			c) Material (Refer Tables 400.7, 8, 9 and 10)				
			Aggregate				
			Grading 2 63 mm to 45 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.60	999.00	4,35,164.40
			Stone Screening				
			Type B 11.2 mm for Grading 2 @ 0.20 cum per 10 sqm	cum	96.01	1,213.00	1,16,460.13
			Binding Material				
			Binding Material @ 0.06 cum per 10 sqm for Grading 2 material	cum	28.80	82.00	2,361.60
			Water	kl	144.00	102.00	14,688.00
							<u>6,34,421.53</u>
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				79,302.69
							<u>7,13,724.22</u>

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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e) Add 1% labour cess on
a+b+c+d.

7,137.24

Cost for 360 cum = a+b+c+d+e

7,20,861.46

Rate per cum =

2,002.39

Say Rs. 2,002.00

Note: Type A Screening can be used in Grading 2

3) WBM Grading 3

Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with smooth wheel roller 80-100 kN in stages to proper grade and camber, applying and brooming, stone screening to fill-up the interstices of coarse aggregate, watering and compacting to the required density Grading 3 as per Technical Specification Clause 405.

(A) By Manual Means

Unit = cum

Taking output = 360 cum

a) Labour

Mate	day	10.08	210.00	2,116.80
Mazdoor (Skilled)	day	2.00	210.00	420.00
Mazdoor (Unskilled)	day	250.00	210.00	52,500.00

b) Machinery

Three wheel 80-100 kN static roller @ 8 cum per hour	hour	45.00	741.00	33,345.00
Water tanker 6 kl capacity	hour	24.00	500.00	12,000.00

c) Material (Refer Tables 400.7, 8, 9 and 10)

Aggregate

Grading 3 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.60	1,067.00	4,64,785.20
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Stone Screening

Type B 11.2 mm for Grading 3 @ 0.18 cum per 10 sqm	cum	86.40	1,213.00	1,04,803.20
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Water	kl	144.00	102.00	<u>14,688.00</u>
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Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
							6,84,658.20
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				85,582.28
							7,70,240.48
			e) Add 1% labour cess on a+b+c+d.				7,702.40
			Cost for 360 cum = a+b+c+d+e				7,77,942.88
			Rate per cum =				2,160.95
							2,161.00
			(B) By Mechanical Means				
			Unit = cum				
			Taking output = 360 cum				
			a) Labour				
			Mate	day	0.68	210.00	142.80
			Mazdoor (Skilled)	day	2.00	210.00	420.00
			Mazdoor (Unskilled)	day	15.00	210.00	3,150.00
			b) Machinery				
			Motor grader 110 HP @ 50 cum per hour for spreading	hour	7.20	2,318.00	16,689.60
			Three wheel 80-100 kN static roller @ 8 cum per hour	hour	45.00	741.00	33,345.00
			Water tanker 6 kl capacity	hour	24.00	500.00	12,000.00
			c) Material (Refer Tables 400.7, 8, 9 and 10)				
			Aggregate				
			Grading 3 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.60	1,067.00	4,64,785.20
			Stone Screening				
			Type B 11.2 mm for Grading 3 @ 0.18 cum per 10 sqm	cum	86.40	1,213.00	1,04,803.20
			Water	kl	144.00	102.00	14,688.00
							6,49,881.00
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				81,235.13
							7,31,116.13
			e) Add 1% labour cess on a+b+c+d.				7,311.16
			Cost for 360 cum = a+b+c+d+e				7,38,427.29
			Rate per cum =				2,051.19
							Say Rs. 2,051.00

Chapter – 5

BASES AND SURFACE COURSES (BITUMINOUS)

Preamble:

- 1 Various alternatives for machines and materials have been provided. The one that suits a particular situation and design may be adopted.
- 2 The outputs considered for construction equipment are for compacted quantities of relevant items and not for loose quantities.
- 3 In case of prime coat and tack coat, average quantities of binder indicated in specifications have been taken.
- 4 Tack coat and prime coat, wherever provided, are required to be measured and paid separately.
- 5 Cleaning of surface is a part of the item of prime coat and tack coat. As such cleaning of surface has not been provided for bituminous courses as the same is already catered in prime/tack coat. However, for those cases where such coats are not required to be done, cleaning of surface shall be included and paid.
- 6 Rolling of bituminous courses is required to be done as per Clause 504.3.6 of MORD Specifications. Provision in the analysis has been made accordingly. It has been observed during actual practice at work sites, that the availability of road roller is generally inadequate. As compaction is the key to good construction, this point is being specifically highlighted to ensure that adequate number of road rollers as per provision in the rate analysis are deployed at site.
- 7 Spreading of bituminous materials shall be done by mechanical means except in areas where a mechanical paver cannot have access.
- 8 Hot Mazdoor is the one who work for Bitumen heating/spreading or spreading of hot bituminous mix. He will be paid the same wages. However, he will be provided safety kits containing normally gumboots, hand gloves, dark goggles, barnol, country soap, coconut oil, tarring outfits, etc. For this purpose, additional 0.5 per cent sundries have been provided in the analysis of rates in addition to the normal sundries covered by overheads.
- 9 Where the proposed aggregates fail to pass the stripping value test, an approved adhesion agent shall be added to the binder as per Clause 507.2.4 with the approval of the Engineer and cost of the adhesion agent shall be added under the subhead of materials.
- 10 The Factor for usage of rollers has been taken as 0.65 in case of Bituminous Macadam only.
- 11 Rate analysis has been given separately using various types of bitumen, i.e., penetrations grade S90, S65, Polymer Modified Bitumen and Natural Rubber Modified Bitumen to facilitate preparation of Standard Schedule of Rates.
- 12 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
21	5.1	502	Prime Coat				
			(i) Low porosity				
			Providing and applying primer coat with bitumen emulsion (SS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.70-1.0 kg/sqm using mechanical means as per Technical Specification Clause 502				
			Unit = sqm				
			Taking output = 1750 sqm				
			a) Labour				
			Mate	day	0.04	210.00	8.40
			Mazdoor (Unskilled)	day	1.00	210.00	210.00
			b) Machinery				
			Hydraulic broom @ 1250 sqm per hour	hour	1.40	528.00	739.20
			Air compressor 210 cfm	hour	1.40	465.00	651.00
			Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	1,569.00	1,569.00
			Water tanker 6 kl capacity 1 trip per hour	hour	0.50	500.00	250.00
			c) Material				
			Bitumen emulsion (SS-1) @ 0.85 kg per sqm	t	1.48	52,574.00	77,809.52
			Water	kl	3.00	102.00	306.00
							81,543.12
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				10,192.89
							91,736.01
			e) Add 1% labour cess on a+b+c+d.				917.36
			Cost of 1750 sqm = a+b+c+d+e				92,653.37
			Rate per sqm = (a+b+c+d+e)/1750				52.94
							Say Rs. 53.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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22 5.2 503 **Tack Coat**

- (i) Providing and applying tack coat with Bitumen emulsion (RS-1) using emulsion distributor at the rate of 0.20 to 0.25 kg per sqm on the prepared bituminous surface cleaned with Hydraulic broom as per Technical Specification Clause 503.

Unit = sqm

Taking output = 1750 sqm

a) **Labour**

Mate	day	0.04	210.00	8.40
Mazdoor (Unskilled)	day	1.00	210.00	210.00

b) **Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	1.40	528.00	739.20
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Air compressor 210 cfm	hour	1.40	465.00	651.00
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Emulsion pressure distributor @1750 sqm per hour	hour	1.00	950.00	950.00
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c) **Material**

Bitumen emulsion (RS-1) @ 0.225 kg per sqm	t	0.39	50,383.00	19,649.37
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22,207.97

- d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

2,776.00

24,983.97

- e) Add 1% labour cess on a+b+c+d.

249.84

Cost of 1750 sqm = a+b+c+d+e

25,233.81

Rate per sqm = (a+b+c+d+e)/1750

14.42

Say Rs. 14.00

- (ii) Providing and applying tack coat with Bitumen emulsion (RS-1) using emulsion distributor at the rate of 0.25 to 0.30 kg per sqm on the prepared dry and hungry bituminous surface cleaned with Hydraulic broom as per Technical Specification Clause 503.

Unit = sqm

Taking output = 1750 sqm

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			a) Labour				
			Mate	day	0.04	210.00	8.40
			Mazdoor (Unskilled)	day	1.00	210.00	210.00
			b) Machinery				
			Hydraulic broom @ 1250 sqm per hour	hour	1.40	528.00	739.20
			Air compressor 210 cfm	hour	1.40	465.00	651.00
			Emulsion pressure distributor @1750 sqm per hour	hour	1.00	1,569.00	1,569.00
			c) Material				
			Bitumen emulsion (RS-1) @ 0.275 kg per sqm	t	0.48	50,383.00	24,183.84
							<hr/> 27,361.44
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				<hr/> 3,420.18
							<hr/> 30,781.62
			e) Add 1% labour cess on a+b+c+d.				<hr/> 307.82
			Cost of 1750 sqm = a+b+c+d+e				<hr/> 31,089.44
			Rate per sqm = (a+b+c+d+e)/1750				<hr/> 17.77

Say Rs. 18.00

- (iii) Providing and applying tack coat with Bitumen emulsion (RS-1) using emulsion distributor at the rate of 0.25 to 0.30 kg per sqm on the prepared granular surfaces treated with primer & cleaned with Hydraulic broom as per Technical Specification Clause 503.

Unit = sqm

Taking output = 1750 sqm

a) Labour							
Mate	day	0.04	210.00			8.40	
Mazdoor (Unskilled)	day	1.00	210.00			210.00	
b) Machinery							
Hydraulic broom @ 1250 sqm per hour	hour	1.40	528.00			739.20	
Air compressor 210 cfm	hour	1.40	465.00			651.00	
Emulsion pressure distributor @1750 sqm per hour	hour	1.00	1,569.00			1,569.00	
c) Material							
Bitumen emulsion (RS-1) @ 0.275 kg per sqm	t	0.48	50,383.00			24,183.84	
							<hr/> 27,361.44
d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)							<hr/> 3,420.18

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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30,781.62

- e) Add 1% labour cess on a+b+c+d.

307.82

Cost of 1750 sqm = a+b+c+d+e

31,089.44

Rate per sqm = (a+b+c+d+e)/1750

17.77

Say Rs. 18.00

- (iv) Providing and applying tack coat with Bitumen emulsion (RS-1) using emulsion pressure distributor at the rate of 0.30 to 0.35 kg per sqm on the prepared non-bituminous surfaces (cement concrete pavement) cleaned with Hydraulic broom as per Technical Specification Clause 503.

Unit = sqm

Taking output = 1750 sqm

a) **Labour**

Mate	day	0.04	210.00	8.40
Mazdoor (Unskilled)	day	1.00	210.00	210.00

b) **Machinery**

Hydraulic broom @ 1250 sqm per hour	hour	1.40	528.00	739.20
Air compressor 210 cfm	hour	1.40	465.00	651.00
Emulsion pressure distributor @1750 sqm per hour	hour	1.00	1,569.00	1,569.00

c) **Material**

Bitumen emulsion (RS-1) @ 0.325 kg per sqm	t	0.57	50,383.00	28,718.31
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31,895.91

- d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

3,986.99

35,882.90

- e) Add 1% labour cess on a+b+c+d.

358.83

Cost of 1750 sqm = a+b+c+d+e

36,241.73

Rate per sqm = (a+b+c+d+e) / 1750

20.71

Say Rs. 21.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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23 5.9 508 **20mm thick Open-Graded Premix Carpet using Bituminous (penetration grade/modified bitumen) Binder**

Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen 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 three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.

Case - II By Mechanical Means

(I) Bitumen (S-90)

Unit = sqm

Taking output = 4000 sqm (80 cum)

a) Labour

Mate	day	0.52	210.00	109.20
Mazdoor (Unskilled)	day	10.00	210.00	2,100.00
Mazdoor (Skilled)	day	3.00	210.00	630.00

b) Machinery

HMP 30/40 t per hour	hour	6.00	13,798.00	82,788.00
Electric generator set 125 KVA	hour	6.00	1,125.00	6,750.00
Front end loader 1 cum bucket capacity	hour	6.00	1,281.00	7,686.00
Tipper 5.5 10 t capacity	hour	3.64	513.00	1,867.32
Paver finisher	hour	6.00	4,300.00	25,800.00
Three wheel 80-100 kN static roller	hour	16.00	741.00	11,856.00

c) Material

Bitumen (S-90) @ 14.60 kg per 10 sqm	t	5.84	50,100.00	2,92,584.00
Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	108.00	1,220.00	1,31,760.00

5,63,930.52

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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d)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)						70,491.32
							6,34,421.84
e)	Add 1% labour cess on a+b+c+d.						6,344.22
	Cost of 4000 sqm = a+b+c+d+e						6,40,766.05
	Rate per sqm = (a+b+c+d+e)/4000						160.19

Say Rs. 160.00

23 5.10 508.2 **20 mm thick Open Graded Premix Carpet using Bitumen Emulsion as per Technical Specification Clause 508.2**

Unit = sqm

Taking output = 900 sqm (24.3 cum)

a) Labour

Mate	day	0.80	210.00	168.00
Mazdoor (Unskilled)	day	18.00	210.00	3,780.00
Mazdoor (Skilled)	day	2.00	210.00	420.00

b) Machinery

Concrete mixer 0.4/0.28 cum capacity	hour	6.00	350.00	2,100.00
Three wheel 80-100 kN static roller	hour	3.60	741.00	2,667.60

c) Material

Bitumen emulsion (MS) @ 21.50 kg per 10 sqm	t	1.94	60,519.00	1,17,406.86
Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.30	1,220.00	29,646.00

1,56,188.46

d)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)						19,523.56
							1,75,712.02

e)	Add 1% labour cess on a+b+c+d.						1,757.12
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	Cost of 900 sqm = a+b+c+d+e						1,77,469.14
	Rate per sqm = (a+b+c+d+e)/900						197.19

Say Rs. 197.00

24 5.12 510 **Seal Coat**

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A, Type B and Type C as per Technical Specification Clause 510

B. By Mechanical Means

TYPE-B

(I) Bitumen (S-90)

Unit = sqm

Taking output = 5000 sqm (30 cum)

a) Labour

Mate	day	0.16	210.00	33.60
Mazdoor (Unskilled)	day	4.00	210.00	840.00

b) Machinery

HMP of 30/40 t per hour	hour	2.00	16,896.00	33,792.00
Electric generator set 125 KVA	hour	2.00	1,125.00	2,250.00
Front end loader 1 cum bucket capacity	hour	2.00	1,281.00	2,562.00
Tipper 5.5 10 t capacity	hour	1.36	513.00	697.68
Paver finisher	hour	2.00	4,300.00	8,600.00
Three wheel 80-100 kN static roller	hour	10.00	745.00	7,450.00

c) Material

Bitumen (S-90) @ 6.80 kg per 10 sqm	t	3.40	50,100.00	1,70,340.00
Crushed sand defined as passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm	cum	30.00	1,093.00	32,790.00

2,59,355.28

- d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

32,419.41

2,91,774.69

- e) Add 1% labour cess on a+b+c+d.

2,917.75

Cost of 5000 sqm = a+b+c+d+e

2,94,692.44

Rate per sqm = (a+b+c+d+e)/5000

58.94

Say Rs. 59.00

24 5.12 510 **Seal Coat**

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A, Type B and Type C as per Technical Specification Clause 510

By Mechanical Means

(I) Bitumen (SS-2)

Unit = sqm

Taking output = 5000 sqm (30 cum)

a) **Labour**

Mate	day	0.16	210.00	33.60
Mazdoor (Unskilled)	day	4.00	210.00	840.00

b) **Machinery**

Concrete Mixer	hour	8.00	350.00	2,800.00
Three wheel 80-100 kN static roller	hour	10.00	741.00	7,410.00

c) **Material**

Bitumen (SS-2) @ 6.80 kg per 10 sqm	t	3.40	52,574.00	1,78,751.60
Crushed sand defined as passing	cum	30	1093	32790
				2,22,625.20

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

27,828.15
2,50,453.35

e) Add 1% labour cess on

2,504.53

Cost of 5000 sqm = a+b+c+d+e

2,52,957.88

Rate per sqm = (a+b+c+d+e)/5000

50.59

Say Rs. 51.00

Chapter – 6

CEMENT CONCRETE PAVEMENT

Preamble:

- 1 Use of cement concrete pavement for rural roads is likely to be limited to small stretches. These will, therefore, have to be constructed without use of heavy equipment, like, high capacity batching/mixing plant and slip form pavers. Accordingly, the rate analysis is based on concrete mixer of suitable capacity with weigh batcher, fixed side forms and screed, plate and needle vibrators.
- 2 Provision of Plasticizer admixture to improve workability with reduced water cement ratio has been made.
- 3 The rates of materials taken in the analysis/schedule are on lowest prevailing market rate has finalized and approved by the committee constituted. The concrete mixer placement is also assured close to the site of work so that transporting and placement of concrete can be done by labour alone.
- 4 Quantities of materials provided in the rate analysis are for the estimate purpose. Exact quantity of materials will be determined from the job mix formula.
- 5 The rates of earthwork, subgrade and sub-base may be adopted from Chapters 3 and 4 as appropriate.
- 6 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 6
CEMENT CONCRETE PAVEMENT

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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NIL

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Chapter – 7

CAUSEWAY AND SUBMERSIBLE BRIDGES

Preamble:

- 1 The quantities of various items may be worked out from the design and drawings.
- 2 Rate analysis of various items involved in the construction of concrete causeway may be taken from relevant Chapters.
- 3 RCC Hume Pipes of NP-2, NP-3 and NP-4 (non-pressure types) have been considered in the analysis.
- 4 Rate analysis for items of submersible bridges may be based on the respective items of Chapters 11, 12 and 13 dealing with bridges. Rates for guide posts may be taken from Chapter 8.
- 5 Rate analysis of item of river training and protection works may be based on the respective items in Chapter 14 (Protection Works).
- 6 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 7
CAUSEWAY AND SUBMERSIBLE BRIDGES

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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NIL

Chapter – 8

HILL ROADS

Preamble:

1. The Chapter covers only the analysis of rates for items which are peculiar to hill roads. For other items, reference may be made to relevant Chapters and analysis modified as suggested in note 2 below.
- 2 **Extra Provision for High Altitude Areas**

Considering the loss of output of men and machines above 2100 m altitude, the following percentage addition to cost of manpower and usage rates of machines may be considered in the analysis of rates given in various Chapters.

Altitude in m	% of the value in Manpower to be added to rates	% of the value in Machine to be added to rates
2100 to 2400	7%	3%
2401 to 2700	15%	6%
2701 to 3000	25%	9%
3001 to 3300	32%	12%
3301 to 3600	48%	15%
3601 to 3900	66%	18%
3901 to 4200	86%	21%
4201 to 4500	108%	24%
4501 to 4800	132%	27%
4801 to 5100	186%	30%

The above provisions are based on the report of Defence Institute of Physiology and Allied Sciences, Delhi Cantt. regarding quantitative reduction in the physical work capacity of individuals working in high altitude areas and the recommendation of the Committee on Cost of Construction set-up by Border Roads Development Board for reduction in output of machines while working in high altitudes. These figures are adopted from 'Standard Schedule of Rates' of BRO as applicable to high altitude areas.

- 3 The above addition is also to be applied on the analysis of rates for items provided in this Chapter.
- 4 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 8 HILL ROADS

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
25	8.2	1600	Setting Out Unit = 1km The analysis of rate per km shall account for the following: (1) Construction of reference pillars (burjee) @ 20 m on both sides as per Fig. 1600.1 (b) and @ 8.33 m interval on curves (2) Construction of back pillars in front of each reference pillar as per Fig. 1600.1 (c) (3) Construction of job pillars as per Fig. 1600.1 (d) (1) Construction of reference pillars as per Fig. 1600.1 (b) as per drawing and Technical Specification Clause 1602.1 (a) Earthwork in excavation for foundation as per drawing and technical specifications. Rate as per item No.11.1 of Chapter 11 cum 1.20 199.00 238.80 (b) Stone masonry work in cement mortar 1:4 in foundation complete as per drawing and technical specifications Rate as per item No.11.6, I(ii) of Chapter 11 cum 1.20 4,502.00 5,402.40 (c) Plaster with cement mortar 1:4 as per technical specifications Rate as per item No.12.4 of Chapter 12 sqm 4.00 161.00 644.00 6,285.20 Add 5% of (a+b+c) for white washing, lettering and painting, etc. 314.26 Total Cost for each Reference Pillar 6,599.46 Say Rs. 6,599.00 Labour Rate				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Rate as per item No.11.1 of Chapter 11	cum	1.20	199.00	238.80
			Rate as per item No.11.6, I(ii) of Chapter 11	cum	1.20	1,334.00	1,600.80
			Rate as per item No.12.4 of Chapter 12	sqm	4.00	69.00	276.00
							<hr/> 2,115.60
			Add 5% of (a+b+c) for white washing, lettering and painting, etc.				105.78
			Total Cost for each Reference Pillar				<hr/> 2,221.38

Say Rs. 2,221.00

- (2) Construction of back pillar as per Fig. 1600.1(c) as per drawing and Technical Specification Clause 1602.3

- (a) Earthwork in excavation for foundation as per drawing and technical specifications

Rate as per item No. 11.1 cum of Chapter 11 3.60 199.00 716.40

- (b) Stone masonry work in cement mortar 1:4 in foundation complete as per drawing and technical specifications

Rate as per item No. 11.6, cum I(ii) Chapter 11 3.60 4,502.00 16,207.20

- (c) Plaster with cement mortar 1:4 as per technical specifications

Rate as per item No. 12.4 of Chapter 12 45.00 161.00 7,245.00

24,168.60

- Add 5% of (a+b+c) for white washing, lettering and painting, etc.

1,208.43

Total Cost for each back Pillar

25,377.03

Say Rs. 25,377.00

Labour Rate

a) Rate as per item No.11.1 of Chapter 11 cum 3.60 199.00 716.40

b) Rate as per item No.11.6, I(ii) of Chapter 11 cum 3.60 1,334.00 4,802.40

c) Rate as per item No.12.4 of Chapter 12 sqm 45.00 69.00 3,105.00

8,623.80

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Add 5% of (a+b+c) for white washing, lettering and painting, etc.				431.19
			Total Cost for each Reference Pillar				9,054.99
						Say Rs. 9,055.00	
			(3) Construction of Job pillars as per Fig. 1600.1 (d) and Technical Specification Clause 1602.4				
			(a) Earthwork in excavation for foundation as per drawing and technical specification				
			Rate as per item No.11.1 of cum Chapter 11		0.096	199.00	19.10
			(b) Stone masonry work in cement mortar in foundation complete as per drawing and technical specification				
			Rate as per item No. 11.6, cum I(ii) of Chapter 11		0.096	4,502.00	432.19
			(c) Plaster with cement mortar 1:4 as per drawing and technical specification				
			Rate as per Item No.12.4 of sqm Chapter 12		0.96	161.00	154.56
							605.86
			Add 5% of (a+b+c) for white washing, lettering and painting, etc.				30.29
			Total Cost for each Job Pillar				636.15
						Say Rs. 636.00	
			Labour Rate				
			a) Rate as per item No.11.1 of cum Chapter 11		0.096	199.00	19.10
			b) Rate as per item No.11.6, cum I(ii) of Chapter 11		0.096	1,334.00	128.06
			c) Rate as per item No.12.3 of sqm Chapter 12		0.96	69.00	66.24
							213.41
			Add 5% of (a+b+c) for white washing, lettering and painting, etc.				10.67
			Total Cost for each Reference Pillar				224.08
						Say Rs. 224.00	

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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(i) **Excavation in Hilly Areas in Soil by manual means.**

A) **Excavation in soil in Hilly Area by manual means including cutting and trimming of side slopes and disposing of excavated earth with a lift upto 1.5 m and a lead upto 20 m as per drawing and Technical Specification Clause 1603.1**

Unit = cum

Taking output = 120 cum

a) **Labour**

Mate	day	2.40	210.00	504.00
Mazdoor (Unskilled)	day	60.00	210.00	12,600.00
				<u>13,104.00</u>

c) **Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)**

<u>1,638.00</u>
14,742.00

d) **Add 1% labour cess on a+b+c.**

<u>147.42</u>

Cost for 120 cum = (a+b+c+d)

14,889.42

Rate per cum = (a+b+c)/120

124.08

Say Rs. 124.00

B) **Extra for Every Additional Lift of 1.5 m or Part thereof**

Excavation in Soil

Unit = cum

Taking output = 10 cum

a) **Labour**

Mazdoor (Unskilled)	day	0.55	210.00	115.50
				<u>115.50</u>

c) **Add 12.5% (Overheads @ 2.5**

<u>14.44</u>
129.94

d) **Add 1% labour cess on a+b+c.**

<u>1.30</u>

Cost for 10 cum = (a+b+c)

131.24

Rate per cum = (a+b+c)/10

13.12

Say Rs. 13.00

(ii) **Excavation in Hilly Areas in Soil by mechanical means**

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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A) **Excavation in soil in Hilly Area by mechanical 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 Technical Specification Clause 1603.1**

Unit = cum

Taking output = 260 cum

a) **Labour**

Mate	day	0.80	210.00	168.00
Mazdoor (Unskilled) for trimming slopes and helping in excavation, etc.	day	20.00	210.00	4,200.00

b) **Machinery**

Dozer D-50 @ 43.28 cum per hour	hour	6.00	3,160.00	18,960.00
Front end loader	hour	6.00	1,321.00	7,926.00
				<u>31,254.00</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

3,906.75

35,160.75

d) Add 1% labour cess on a+b+c.

351.61

Cost for 260 cum = a+b+c+d

35,512.36

Rate per cum = (a+b+c)/260

136.59

Say Rs. 136.59

a) **Labour Rate**

4,368.00

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a)

546.00

4,914.00

d) Add 1% labour cess

49.14

Cost for 260 cum

4,963.14

Rate per cum

19.09

Say Rs. 19.00

B) **Extra for Every Additional Lift of 1.5 m or Part thereof**

Excavation in Soil

Unit = cum

Taking output = 10 cum

a) **Labour**

Mazdoor (Unskilled)	day	0.55	210.00	115.50
				<u>115.50</u>

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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c)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a)						14.44
							129.94
d)	Add 1% labour cess on a+b+c.						1.30
	Cost for 10 cum = (a+b+c)						131.24
	Rate per cum = (a+b+c)/10						13.12

Say Rs. 13.00

(ii) Excavation in Hilly Areas in Ordinary Rock by mechanical means not requiring blasting

Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with a lift upto 1.5 m and lead upto 20 m as per Clause 1603.2.

Unit = cum

Taking output = 170 cum

a) Labour

Mate	day	0.68	210.00	142.80
Mazdoor (Unskilled)	day	17.00	210.00	3,570.00
Mazdoor for disposing of earth upto 20 m	day	9.00	210.00	1,890.00

b) Machinery

Dozer D-50 @ 28.32 cum per hour	hour	6.00	3,160.00	18,960.00
Hydraulic Excavator 0.9 cum bucket capacity @ 40 cum per hour	hour	4.25	1,843.00	7,832.75
				32,395.55

c)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)						4,049.44
							36,444.99

d)	Add 1% labour cess on a+b+c.						364.45
	Cost for 170 cum = a+b+c+d						36,809.44
	Rate per cum = (a+b+c+d)/170						216.53

Say Rs. 217.00

Labour Rate							5,602.80
Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)							700.35
							6,303.15
Add 1% labour cess							63.03

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Cost for 170 cum 6,366.18

Rate per cum 37.45

Say Rs. **Say Rs. 37.00**

(iii) Excavation in Hilly Areas in Hard Rock requiring blasting

A) Excavation in hilly areas in hard rock requiring blasting, by mechanical means, lift upto 1.5 m and disposal of excavated rock upto a lead of 20 m as per Clause 1603.2.

Unit = cum

Taking output = 170 cum

a) Labour

Mate	day	1.36	210.00	285.60
Mazdoor (Unskilled)	day	22.00	210.00	4,620.00
Driller	day	2.00	210.00	420.00
Blaster	day	10.00	259.00	2,590.00

b) Machinery

Dozer D-50 @ 56.67 cum per hour (blasted rock)	hour	3.00	3,160.00	9,480.00
Hydraulic Excavator 0.9 cum bucket capacity @ 34 cum per hour	hour	5.00	1,843.00	9,215.00
Air compressor 210 cfm with two jack hammer @ 6 cum per hour	hour	28.00	465.00	13,020.00

c) Materials

Gelatine 80 per cent	kg	67.00	98.00	6,566.00
Electric detonators @ 1 detonator for 1 Gelatine stick of 285 gm each	nos	235	16.00	3,760.00

49,956.60

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

6,244.58

56,201.18

e) Add 1% labour cess on a+b+c.

562.01

Cost for 170 cum = a+b+c+d+e

56,763.19

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Rate per cum = 333.90
(a+b+c+d+e)/170

Say Rs. 334.00

Labour Rate 7,915.60
Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) 989.45
8,905.05
Add 1% labour cess 89.05
Cost for 170 cum 8,994.10
Rate per cum 52.91

Say Rs. 53.00

B) Extra for Every Additional Lift of 1.5 m or Part thereof

For Hard Rock
Unit = cum
Taking output = 10 cum

a) Labour

Mazdoor (Unskilled) day 1.08 210.00 226.80
Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) 28.35
255.15
Add 1% labour cess 2.55
Cost for 10 cum = a+b+c 257.70
Rate per cum = (a+b+c)/10

Say Rs. 26.00

27 8.4 1600, 600 & Retaining Walls / Breast Walls
700

Construction of retaining walls/breast walls in cement mortar 1:5 as per drawing and technical specifications Clause 1604

(i) Earthwork in excavation for structures

Rate as per item No.11.1 of Chapter 11 cum 1.00 199.00 199.00
Labour Rate as per item no. 11.1 cum 1.00 199.00 199.00

(ii) Plain cement concrete M 10 grade

Rate as per item No.11.4, I(ii) of Chapter 11 cum 1.00 4,897.00 4,897.00
Labour Rate as per item no. 11.4, I(ii) cum 1.00 529.00 529.00

(iii) Stone masonry in cement mortar 1:5

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Rate as per item No. 12.7 (III) (iii) of Chapter 12	cum	1.00	4,210.00	4,210.00
			Labour Rate as per item no. 12.7 (III) (iii)	cum	1.00	1,300.00	1,300.00
			(iv) Pointing with cement mortar 1:3				
			Rate as per item No.12.2 of Chapter 12	sqm	1.00	536.00	536.00
			Labour Rate as per item no. 12.2	sqm	1.00	363.00	363.00
			(v) Providing P.C.C. M 20 architectural coping on top of retaining wall/breast wall				
			Rate as per item No.12.17 of Chapter 12	m	1.00	360.00	360.00
			Labour Rate as per item no. 12.17	m	1.00	33.00	33.00
			(vi) Filter material behind retaining wall / breast wall as per Specification 1204.3.8 in a width of 600 m				
			Rate as per item No. 12.15 of Chapter 12	cum	1.00	1,305.00	1,305.00
			Labour Rate as per item no. 12.15	cum	1.00	408.00	408.00
			(vii) Back filling behind retaining wall/breast wall				
			Rate as per item No. 12.14 of Chapter 12	cum	1.00	768.00	768.00
			Labour Rate as per item no. 12.14	cum	1.00	342.00	342.00

SUB-ANALYSIS OF RATE

Sub-analysis

Cement mortar 1:3 (1 cement : 3 sand)

Unit = cum

a) Material

Cement	t	0.51	7,688.00	3,920.88
Sand	cum	1.05	1,101.00	1,156.05

b) Labour

Mate	day	0.04	210.00	8.40
Mazdoor (Unskilled)	day	0.90	210.00	189.00
Bhisti	day	0.08	210.00	16.80

Total material and labour = (a+b)

5,291.13

Say Rs. 5,291.00

214.20

Labour Rate

Sub-analysis

Cement mortar 1:4 (1 cement : 4 sand)

Unit = cum

a) Material

Cement	t	0.38	7,688.00	2,921.44
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Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Sand	cum	1.05	1,101.00	1,156.05
			b) Labour				
			Mate	day	0.04	210.00	8.40
			Mazdoor (Unskilled)	day	0.90	210.00	189.00
			Bhisti	day	0.08	210.00	16.80
			Total material and labour = (a+b)				4,291.69
						Say Rs. 4,292.00	
			Labour Rate				214.20

Sub-analysis

Cement mortar 1:5 (1 cement, 5 sand)

a) Material							
Cement	t	0.31	7,688.00	2,383.28			
Sand	cum	1.05	1,101.00	1,156.05			
b) Labour							
Mate	day	0.04	210.00	8.40			
Mazdoor (Unskilled)	day	0.90	210.00	189.00			
Bhisti	day	0.08	210.00	16.80			
Total material and labour = (a+b)							3,753.53
						Say Rs. 3,754.00	
			Labour Rate				214.20

Sub-Analysis

Cement Mortar 1:6 (1 Cement : 6 Sand)

Unit = cum

a) Material							
Cement	t	0.25	7,688	1,922.00			
Sand	cum	1.05	1,101.00	1,156.05			
b) Labour							
Mate	day	0.04	210.00	8.40			
Mazdoor (Unskilled)	day	0.90	210.00	189.00			
Bhisti	day	0.08	210.00	16.80			
Total Material and Labour (a+b)							3,292.25

Say Rs. 3,292.00
214.20

Labour Rate

28 8.5 1600, 700, 300 & 800 **Construction of Hill Side Drain**

Construction of hill side drain in accordance with the requirement of specifications true to lines and grades. Dimesions and other particulars as per drawing and Technical Specification Clause 1606.1

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Unit = 1 m				
			(i) Earthwork in excavation for structures as per drawing and technical specification				
			Rate as per item No.11.1 of Chapter 11	cum	1.00	199.00	199.00
			(ii) Plain cement concrete M10 grade				
			Rate as per item No.11.4 (I) (ii) of Chapter 11	cum	1.00	4,897.00	4,897.00
			(iii) Stone masonry in cement mortar 1:5				
			Rate as per item No.12.7 (III) (iii) of Chapter 12	cum	1.00	4,210.00	4,210.00
			(iv) Plain cement concrete M15 grade				
			Rate as per item No.11.4 (II) (i) of Chapter 11	cum	1.00	4,423.00	4,423.00
			(v) Cement plaster 15 mm thick 1:4 on stone masonry				
			Rate as per item No.12.4 of Chapter 12	sqm	1.00	161.00	161.00
			(vi) Providing P.C.C. M20 architectural coping on top of wall				
			Rate as per item No.12.17 of Chapter 12	m	1.00	360.00	360.00
			Rate per m length (i+ii+iii+iv+v+vi)				14,250.00
							Say Rs. 14,250.00
			Labour Rate				
			Labour Rate as per item no. 11.1	cum	1.00	199.00	199.00
			Labour Rate as per item no. 11.4, I(ii)	cum	1.00	529.00	529.00
			Labour Rate as per item no. 12.7 (III) (iii)	cum	1.00	1,300.00	1,300.00
			Labour Rate as per item no. 11.4 (II) (i)	cum	1.00	529.00	529.00
			Labour Rate as per item no. 12.4	sqm	1.00	69.00	69.00
			Labour Rate as per item no. 12.17	m	1.00	33.00	33.00
			Labour Rate per m length				2,659.00
							Say Rs. 2,659.00

Chapter – 9

PIPE CULVERTS

Preamble:

- 1 Pipe culverts of sizes 600, 750 mm, 900, 1000 mm and 1200 mm dia in single row and double row which are generally used on roads, have been included. Providing and laying of pipe has been included in the rate analysis. Items of auxiliary works such as excavation, bedding, backfilling, concrete and masonry shall be analysed, as provided under the respective sections and paid for separately.
- 2 Analysis has been given separately for NP2, NP3 and NP4 pipes for ease of adoption.
- 3 Cost of any river training and protection work like stone pitching, apron, curtain wall etc. may be analysed under the respective item included in Chapter 14.
- 4 The joining of pipes is proposed by collar joints.
- 5 Chain & pulley for lifting the pipes is considered part of overheads.
- 6 The thickness of first class bedding has been taken as 150 mm. The height of bedding has been taken as 1/10th of overall height of pipe in the analysis. This may be modified as per thickness indicated in the approved drawing.
- 7 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 9 PIPE CULVERTS

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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29	9.4	1100	Providing and Laying Reinforced Cement Concrete Pipe NP2 as per design in Double Row . Providing and laying reinforced cement concrete pipe NP2 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 as per clause 1106				
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Providing and laying reinforced cement concrete pipe NP2 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 Clause 1106.

Unit = m

Taking output = 7.5 m

(6 pipes of 2.5 m length each in two rows)

(A) 1200 mm dia

a) Labour

Mate	day	0.34	210.00	71.40
Mason (1st Class)	day	1.20	315.00	378.00
Mazdoor (Unskilled)	day	7.20	210.00	1,512.00

b) Material

Sand at site	cum	0.11	1,101.00	121.11
Cement at site	t	0.14	7,688.00	1,076.32
RCC pipe NP2 pipe including collar at site	m	15.00	3,809.00	57,135.00

60,293.83

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

7,536.73

67,830.56

d) Add 1% labour cess on a+b+c.

678.31

Cost for 7.5 m = a+b+c+d

68,508.86

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Rate per m = (a+b+c+d)/7.5				9,134.52
						Say Rs. 9,135.00	
			Labour Rate				1,961.40
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				245.18
							2,206.58
			Add 1% labour cess				22.07
			Cost for 7.5 m				2,228.64
			Rate per m				297.15
						Say Rs. 297.00	
			(B) 1000 mm dia				
			a) Labour				
			Mate	day	0.22	210.00	46.20
			Mason (1st Class)	day	0.60	315.00	189.00
			Mazdoor (Unskilled)	day	4.80	210.00	1,008.00
			b) Material				
			Sand at site	cum	0.06	1,101.00	66.06
			Cement at site	t	0.06	7,688.00	461.28
			RCC pipe NP2 pipe including collar at site	m	15.00	3,583.00	53,745.00
							55,515.54
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				6,939.44
							62,454.98
			d) Add 1% labour cess on a+b+c.				624.55
			Cost for 7.5 m = a+b+c+d				63,079.53
			Rate per m = (a+b+c+d)/7.5				8,410.60
						Say Rs. 8,411.00	
			Labour Rate				1,243.20
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				155.40
							1,398.60
			Add 1% labour cess				13.99
			Cost for 7.5 m				1,412.59
			Rate per m				188.34
						Say Rs. 188.00	
			(C) 900 mm dia				
			a) Labour				
			Mate	day	0.18	210.00	37.80
			Mason (1st Class)	day	0.48	315.00	151.20
			Mazdoor (Unskilled)	day	3.84	210.00	806.40
			b) Material				
			Sand at site	cum	0.08	1,101.00	88.08
			Cement at site	t	0.06	7,688.00	461.28

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			RCC pipe NP2 pipe including collar at site	m	15.00	3,016.00	45,240.00
							46,784.76
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)			5,848.10	52,632.86
			d) Add 1% labour cess on a+b+c.			526.33	53,159.18
			Cost for 7.5 m = a+b+c+d				7,087.89
			Rate per m = (a+b+c+d)/7.5				
			Labour Rate				Say Rs. 7,088.00
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)			124.43	995.40
							1,119.83
			Add 1% labour cess			11.20	
			Cost for 7.5 m				1,131.02
			Rate per m				150.80
							Say Rs. 151.00

30 9.5 1100 **Providing and Laying Reinforced Cement Concrete Pipe NP3 as per design in Single Row**

Providing and laying reinforced cement concrete pipe NP3 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 Clause 1106.

Unit = m

Taking output = 7.5 m

(3 pipes of 2.5 m length each)

(C) 900 mm dia

a) **Labour**

Mate	day	0.07	210.00	14.70
Mason 1st Class	day	0.20	315.00	63.00
Mazdoor (Unskilled)	day	1.60	210.00	336.00

b) **Material**

Sand at site	cum	0.04	1,101.00	44.04
Cement at site	t	0.030	7,688.00	230.64
RCC pipe NP3 pipe including collar at site	m	7.50	4,119.00	30,892.50

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
							31,580.88
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)			3,947.61	
							35,528.49
			d) Add 1% labour cess on a+b+c.			355.28	
			Cost for 7.5 m = a+b+c+d			35,883.77	
			Rate per m = (a+b+c+d)/7.5			4,784.50	
			Say Rs.			Say Rs. 4,785.00	
			Labour Rate			413.70	
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)			51.71	
						465.41	
			Add 1% labour cess			4.65	
			Cost for 7.5 m			470.07	
			Rate per m			62.68	
						Say Rs. 63.00	

Chapter–10

TRAFFIC SIGNS, MARKINGS AND OTHER APPURTENANCES

Preamble:

- 1 Rate analysis for fencing provides for Barbed wire fencing with R.C.C. M 15 grade concrete post.
- 2 Backfilling of foundation of boundary pillars has been proposed with stone spalls, tightly packed and compacted.
- 3 The item pertaining to road traffic signals has not been analysed as this is a specialized work and rates can be obtained from firms having specialisation for design and installation of this work.
- 4 Two supports have been provided for direction and place identification signs where size is more than 0.9 square metres. Only one support is provided for size upto 0.9 square metres.
- 5 The traffic signs proposed are of retro-reflectorised types made of encapsulated lens type reflective sheeting fixed over aluminum sheeting and semi-reflective type on M.S. sheet.
- 6 The size and location of traffic signs shall be as per IRC:67.
- 7 Separate rate analysis has been made for tubular steel railing with RCC posts and MS steel posts.
- 8 In the case of road signs and direction boards, the depth of foundation and quantity of cement concrete provided in the rate analysis are indicative. These may be suitably increased in areas of higher wind velocities, like, coastal areas.
- 9 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter-10
TRAFFIC SIGNS, MARKINGS AND OTHER APPURTENANCES

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)																																										
31	10.1	1700	<p>Printing New Letters and Figures of any Shade</p> <p>Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade as per drawings and Technical Specification Clause 1701</p> <p>i) Hindi (Matras commas and the like not to be measured and paid for. Half letters shall be counted as half only)</p> <p>Details for 100 letters of 160 mm height, i.e., 1600 cm</p> <p>Unit = per cm height per letter</p> <p>a) Labour</p> <table><tr><td>Mate</td><td>day</td><td>0.12</td><td>210.00</td><td>25.20</td></tr><tr><td>Painter 1st Class</td><td>day</td><td>2.00</td><td>259.00</td><td>518.00</td></tr><tr><td>Mazdoor (Unskilled)</td><td>day</td><td>1.00</td><td>210.00</td><td>210.00</td></tr></table> <p>b) Material</p> <table><tr><td>Paint</td><td>litre</td><td>0.70</td><td>149.00</td><td>104.30</td></tr></table> <p style="text-align: right;">Say Rs. 0.50</p> <p>Labour Rate 753.20</p> <p>d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)</p> <table><tr><td></td><td></td><td></td><td></td><td>107.19</td></tr></table> <p style="text-align: right;">e) Add 1% labour cess on a+b+c+d.</p> <table><tr><td></td><td></td><td></td><td></td><td>9.65</td></tr></table> <p>Cost for 1600 cm = a+b+c+d 974.33</p> <p>Rate per cm height per letter = (a+b+c+d)/1600 0.61</p> <p>Say Rs. 0.50</p> <p>Labour Rate 753.20</p> <p>d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)</p> <table><tr><td></td><td></td><td></td><td></td><td>94.15</td></tr></table> <p style="text-align: right;">e) Add 1% labour cess</p> <table><tr><td></td><td></td><td></td><td></td><td>8.47</td></tr></table> <p>Cost for 1600 cm 855.82</p> <p>Rate per cm height per letter 0.53</p> <p style="text-align: right;">Say Rs. 0.45</p>	Mate	day	0.12	210.00	25.20	Painter 1st Class	day	2.00	259.00	518.00	Mazdoor (Unskilled)	day	1.00	210.00	210.00	Paint	litre	0.70	149.00	104.30					107.19					9.65					94.15					8.47						
Mate	day	0.12	210.00	25.20																																													
Painter 1st Class	day	2.00	259.00	518.00																																													
Mazdoor (Unskilled)	day	1.00	210.00	210.00																																													
Paint	litre	0.70	149.00	104.30																																													
				107.19																																													
				9.65																																													
				94.15																																													
				8.47																																													

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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ii) English and Roman

Hyphens, commas and the like not to be measured and paid for. Detail for 100 letters of 160 mm height, i.e., 1600 cm

Unit = per cm height per letter

a) Labour

Mate	day	0.07	210.00	14.70
Painter Ist class	day	1.25	259.00	323.75
Mazdoor	day	0.50	210.00	105.00

b) Material

Paint	litre	0.50	149.00	74.50
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517.95

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

64.74

582.69

e) Add 1% labour cess on a+b+c+d.

5.83

Cost for 1600 cm = a+b+c+d

588.52

Rate per cm height per letter = (a+b+c +d)/1600

0.37

Say Rs.

Say Rs. 0.30

Labour Rate

443.45

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

55.43

498.88

e) Add 1% labour cess

4.99

Cost for 1600 cm

503.87

Rate per cm height per letter

0.31

Say Rs.

Say Rs. 0.25

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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32 10.2 1700, 300, 800 **Traffic Signs**

B. Semi Reflective Traffic Signs

- (I) Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS Sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD for Rural Roads of required shade and colour supported and welded on 47mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by mean of properly designed foundations with M-15 grade cement concrete 450x450x600 mm, 600 mm below ground level as per approved drawing Clause 1701.2.2

Unit = Each

Taking output = one traffic sign

(i) Excavation foundations

As per Item No. 1 to 11.1 of Chapter 11 cum 0.126 199.00 25.07

(ii) Cement concrete M-15 Grade

As per item no. 11.4 of Chapter 11 cum 0.126 4,906 618.16

(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications

As per item no 10.7 of Chapter 11 sqm 0.46 101.00 46.46

a) Labour (For fixing at site)

Mate day 0.01 210.00 2.10

Mazdoor (Unskilled) day 0.25 210.00 52.50

b) Material

Support of M.S. Sheet tube

(I) 47 mm x 47 mm x 12 SWG Sheet kg 12.40 91.00 1,128.40

3050 mm long

(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage kg 1.06 91.00 96.46

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			(III 1.5 mm thick M.S. Sheet) duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications				
			i) 900 mm equilateral & triangle	sqm	0.35	376.00	131.60
			Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				36.75
			c) Machinery				
			Tractor with Trolley	hour	0.08	581.00	46.48
							2,183.98
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				186.79
							2,370.76
			e) Add 1% labour cess on a+b+c+d.				23.71
			Rate per traffic sign =				2,394.47
						Say Rs. 2,394.00	
			Labour Rate				54.60
			Labour for item No. 11.1				0.06
			Labour for item No. 11.4				66.65
			Labour for item No. 10.7				25.76
							147.07
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				18.38
							165.45
			Add 1% labour cess .				1.65
			Rate per traffic sign				167.11
						Say Rs. 167.00	

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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- (II) Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS Sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD for Rural Roads of required shade and colour supported and welded on 47mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by mean of properly designed foundations with M-15 grade cement concrete 450x450x600 mm, 600 mm below ground level as per approved drawing Clause 1701.2.2

Unit = Each

Taking output = one traffic sign

(i) Excavation foundations

As per Item No. 1 to 11.1 of Chapter 11 cum 0.126 199.00 25.07

(ii) Cement concrete M-15 Grade

As per item no. 11.4 of Chapter 11 cum 0.126 4,906 618.16

(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications

As per item no 10.7 of Chapter 11 sqm 0.46 101.00 46.46

a) Labour (For fixing at site)

Mate day 0.01 210.00 2.10

Mazdoor (Unskilled) day 0.25 210.00 52.50

b) Material

Support of M.S. Sheet tube

(I) 47 mm x 47 mm x 12 SWG Sheet kg 12.40 91.00 1,128.40

3050 mm long

(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage kg 1.06 91.00 96.46

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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(III 1.5 mm thick M.S. Sheet
) duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications

ii) 600 mm equilateral & triangle sqm 0.156 376.00 58.66

Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc. 36.75

c) **Machinery**

Tractor with Trolley hour 0.08 581.00 46.48
2,111.03

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c) 177.67
2,288.70

e) Add 1% labour cess on a+b+c+d. 22.89
Rate per traffic sign = 2,311.59

Say Rs. 2,312.00

Labour Rate 54.60
Labour for item No. 11.1 0.06
Labour for item No. 11.4 66.65
Labour for item No. 10.7 25.76
147.07

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) 18.38
165.45

Add 1% labour cess . 1.65
Rate per traffic sign 167.11

Say Rs. 167.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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(III) Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS Sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD for Rural Roads of required shade and colour supported and welded on 47mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by mean of properly designed foundations with M-15 grade cement concrete 450x450x600 mm, 600 mm below ground level as per approved drawing Clause 1701.2.2

Unit = Each

Taking output = one traffic sign

(i) Excavation foundations

As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	199.00	25.07
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(ii) Cement concrete M-15 Grade

As per item no. 11.4 of Chapter 11	cum	0.126	4,906	618.16
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(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications

As per item no 10.7 of Chapter 11	sqm	0.46	101.00	46.46
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a) Labour (For fixing at site)

Mate	day	0.01	210.00	2.10
Mazdoor (Unskilled)	day	0.25	210.00	52.50

b) Material

Support of M.S. Sheet tube

(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	91.00	1,128.40
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(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	91.00	96.46
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Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			(III 1.5 mm thick M.S. Sheet) duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications				
			iii) 600 mm circular	sqm	0.283	376.00	106.41
			Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				36.75
			c) Machinery				
			Tractor with Trolley	hour	0.08	581.00	46.48
							2,158.78
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				183.64
							2,342.42
			e) Add 1% labour cess on a+b+c+d.				23.42
			Rate per traffic sign =				2,365.85
						Say Rs. 2,366.00	
			Labour Rate				54.60
			Labour for item No. 11.1				0.06
			Labour for item No. 11.4				66.65
			Labour for item No. 10.7				25.76
							147.07
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				18.38
							165.45
			Add 1% labour cess .				1.65
			Rate per traffic sign				167.11
						Say Rs. 167.00	

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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(IV) Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS Sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD for Rural Roads of required shade and colour supported and welded on 47mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by mean of properly designed foundations with M-15 grade cement concrete 450x450x600 mm, 600 mm below ground level as per approved drawing Clause 1701.2.2

Unit = Each

Taking output = one traffic sign

(i) Excavation foundations

As per Item No. 1 to 11.1 of Chapter cum 0.126 199.00 25.07

(ii) Cement concrete M-15 Grade

As per item no. 11.4 of Chapter 11 cum 0.126 4,906 618.16

(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications

As per item no 10.7 of Chapter 11 sqm 0.46 101.00 46.46

a) Labour (For fixing at site)

Mate	day	0.01	210.00	2.10
Mazdoor (Unskilled)	day	0.25	210.00	52.50

b) Material

Support of M.S. Sheet tube

(I) 47 mm x 47 mm x 12 SWG Sheet	kg	12.40	91.00	1,128.40
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3050 mm long

(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	91.00	96.46
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(III 1.5 mm thick M.S. Sheet) duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			iv) 800 mm x 600 mm rectangular	sqm	0.480	376.00	180.48
			Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				36.75
			c) Machinery				
			Tractor with Trolley	hour	0.08	581.00	46.48
							2,232.86
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				192.90
							2,425.75
			e) Add 1% labour cess on a+b+c+d.				24.26
			Rate per traffic sign =				2,450.01
						Say Rs. 2,450.00	
			Labour Rate				54.60
			Labour for item No. 11.1				0.06
			Labour for item No. 11.4				66.65
			Labour for item No. 10.7				25.76
							147.07
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				18.38
							165.45
			Add 1% labour cess .				1.65
			Rate per traffic sign				167.11
						Say Rs. 167.00	
			(V) Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS Sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD for Rural Roads of required shade and colour supported and welded on 47mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by mean of properly designed foundations with M-15 grade cement concrete 450x450x600 mm, 600 mm below ground level as per approved drawing Clause 1701.2.2				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Unit = Each Taking output = one traffic sign				
			(i) Excavation foundations				
			As per Item No. 1 to 11.1 of Chapter	cum	0.126	199.00	25.07
			(ii) Cement concrete M-15 Grade				
			As per item no. 11.4 of Chapter 11	cum	0.126	4,906	618.16
			(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications				
			As per item no 10.7 of Chapter 11	sqm	0.46	101.00	46.46
			a) Labour (For fixing at site)				
			Mate	day	0.01	210.00	2.10
			Mazdoor (Unskilled)	day	0.25	210.00	52.50
			b) Material				
			Support of M.S. Sheet tube				
			(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	91.00	1,128.40
			(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	91.00	96.46
			(III) 1.5 mm thick M.S. Sheet duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications				
			v) 600 mm x 450 mm rectangular	sqm	0.270	376.00	101.52
			Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				36.75
			c) Machinery				
			Tractor with Trolley	hour	0.08	581.00	46.48
							2,153.90
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				183.03
							2,336.92
			e) Add 1% labour cess on a+b+c+d.				23.37
			Rate per traffic sign =				2,360.29
						Say Rs. 2,360.00	
			Labour Rate				54.60
			Labour for item No. 11.1				0.06

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Labour for item No. 11.4							66.65
Labour for item No. 10.7							25.76
							<u>147.07</u>

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)							18.38
							<u>165.45</u>

Add 1% labour cess .							1.65
Rate per traffic sign							<u>167.11</u>

Say Rs. 167.00

- (VI) Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS Sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD for Rural Roads of required shade and colour supported and welded on 47mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by mean of properly designed foundations with M-15 grade cement concrete 450x450x600 mm, 600 mm below ground level as per approved drawing Clause 1701.2.2

Unit = Each

Taking output = one traffic sign

(i) Excavation foundations

As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	199.00	25.07
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(ii) Cement concrete M-15 Grade

As per item no. 11.4 of Chapter 11	cum	0.126	4,906	618.16
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(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications

As per item no 10.7 of Chapter 11	sqm	0.46	101.00	46.46
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a) Labour (For fixing at site)

Mate	day	0.01	210.00	2.10
Mazdoor (Unskilled)	day	0.25	210.00	52.50

b) Material

Support of M.S. Sheet tube

(I) 47 mm x 47 mm x 12 SWG Sheet 3050 mm long	kg	12.40	91.00	1,128.40
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Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			(II) Angle iron 50 x 50 x 6 mm for hold fast including 5% wastage	kg	1.06	91.00	96.46
			(III 1.5 mm thick M.S. Sheet) duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications				
			vi) 600 mm x 600 mm	sqm	0.360	376.00	135.36
			Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				36.75
			c) Machinery				
			Tractor with Trolley	hour	0.08	581.00	46.48
							2,187.74
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				187.26
							2,374.99
			e) Add 1% labour cess on a+b+c+d.				23.75
			Rate per traffic sign =				2,398.74
			Say Rs.			Say Rs. 2,399.00	
			Labour Rate				54.60
			Labour for item No. 11.1				0.06
			Labour for item No. 11.4				66.65
			Labour for item No. 10.7				25.76
							147.07
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				18.38
							165.45
			Add 1% labour cess .				1.65
			Rate per traffic sign				167.11
						Say Rs. 167.00	

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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(VII) Providing and fixing of semi reflective cautionary, mandatory and informatory sign board as per IRC:67 made of 1.5 mm thick MS Sheet duly stove white colour in front and gray colour on back with red reflective border of 65 mm width and required letters and figures with reflective tape engineering grade as per Clause 1701.3.9 of MORD for Rural Roads of required shade and colour supported and welded on 47mm x 47 mm x 12 SWG sheet tube firmly fixed to the ground by mean of properly designed foundations with M-15 grade cement concrete 450x450x600 mm, 600 mm below ground level as per approved drawing Clause 1701.2.2

Unit = Each

Taking output = one traffic sign

(i) Excavation foundations

As per Item No. 1 to 11.1 of Chapter 11 cum 0.126 199.00 25.07

(ii) Cement concrete M-15 Grade

As per item no. 11.4 of Chapter 11 cum 0.126 4,906 618.16

(iii) Painting steel tube posts with primer and two coats of epoxy paint as per specifications

As per item no 10.7 of Chapter 11 sqm 0.46 101.00 46.46

a) Labour (For fixing at site)

Mate day 0.01 210.00 2.10

Mazdoor (Unskilled) day 0.25 210.00 52.50

b) Material

Support of M.S. Sheet tube

(I) 47 mm x 47 mm x 12 SWG Sheet kg 12.40 91.00 1,128.40

3050 mm long

(II) Angle iron 50 x 50 x 6 mm kg 1.06 91.00 96.46
for hold fast including 5% wastage

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			(III 1.5 mm thick M.S. Sheet) duly painted with stove enamelled paint including lettering, signs, border, message with reflective tape of engineering grade required size, shade and colour as per Technical Specifications				
			vii) 900 mm side octagon	sqm	0.672	376.00	252.67
			Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				36.75
			c) Machinery				
			Tractor with Trolley	hour	0.08	581.00	46.48
							2,305.05
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				201.92
							2,506.97
			e) Add 1% labour cess on a+b+c+d.				25.07
			Rate per traffic sign =				2,532.04
			Say Rs.			Say Rs. 2,532.00	
			Labour Rate				54.60
			Labour for item No. 11.1				0.06
			Labour for item No. 11.4				66.65
			Labour for item No. 10.7				25.76
							147.07
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				18.38
							165.45
			Add 1% labour cess .				1.65
			Rate per traffic sign				167.11
			Say Rs.			Say Rs. 167.00	
33	10.3	1700, 800 & 300	Direction and Place Identification signs upto 0.9 sqm size board B. Semi-Reflective Traffic signs Direction and place identification signs up to 0.9 sqm size board				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Providing and erecting direction and place identifications of semi reflective sign boards as per IRC:67 made of 2 mm thick M.S. Sheet duly stove enameled paint in white colour in front and grey colour on back with red reflective border of 70 mm width and required message, letters, figures with reflective engineering grade tape as per MORD specifications of required shade and colour.

Supported and welded on 47 mm x 47mm of 12 SWG Square tube of 3050 mm height duly strengthened by 25 mm x 5 mm M/s flat iron on edges on back firmly fixed to the ground by means of properly designed foundations with M-15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawing and Technical Specification Clause 1701

Unit = each

Take Output = 0.9 sqm

(i) Excavation for foundations

As per Item No. 11.1 of Chapter 11 cum 0.126 199.00 25.07

(ii) Cement Concrete M-15 grade

As per Item No. 11.4 of Chapter 11 cum 0.126 4,906.00 618.16

(iii) Painting on M.S. tube post with primer and two coat of epoxy paint as per specifications

As per item No.10.7 of Chapter 10 sqm 0.59 101.00 59.59

a) Labour (For fixing at site)

Mate day 0.01 210.00 2.10

Mazdoor (Unskilled) day 0.25 210.00 52.50

b) Materials

i) Support of MS sheet tube

47 mm x 47 mm of 12 SWG kg 12.40 91.00 1,128.40
sheet 3050 mm long

ii) Angle iron 50 x 50 x 6 mm for kg 1.06 91.00 96.46
lugs including 5% wastage

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			iii) 2 mm thick MS sheet strengthened by 25 mm x 5 mm MS flat iron & painted with stove enameled paint including lettering, signs, message, border with reflective tape of engineering grade of required shade and colour as per Technical Specifications.	sqm	0.90	1,554	1,398.60
			Add 3% cost of MS sheet angle iron towards the cost of fabrications, drilling, holes, nuts, bolts, etc.				36.75
			c) Machinery				
			Tractor with Trolley	hour	0.08	581.00	46.48
							3,464.11
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				345.16
							3,809.27
			e) Add 1% labour cess on a+b+c+d.				38.09
			Cost for 0.9 sqm =				3,847.36
			Rate per sqm = (i+ii+iii+a+b+c+d+e) /				4,274.85
						Say Rs. 4,275.00	
			Labour Rate				54.60
			Labour for item No. 11.1				0.06
			Labour for item No. 11.4				66.65
			Labour for item No. 10.7				33.04
							154.35
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				19.29
							173.64
			Add 1% labour cess .				1.74
			Cost for 0.9 sqm				175.38
			Rate per sqm				194.87
						Say Rs. 195.00	

34	10.5	1700	Painting Two Coats on New Concrete Surfaces
			Painting two coats including primer coat after filling the surface with synthetic enamel paint in all shades on new, plastered / concrete surfaces as per drawing and Technical Specification Clause 1701

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Unit = sqm

Taking output = 40 sqm

a) Labour

Mate	day	0.20	210.00	42.00
Painter (1st Class)	day	3.00	259.00	777.00
Mazdoor (Unskilled)	day	2.00	210.00	420.00

b) Material

Cement Primer as per specifications	litre	3.00	149.00	447.00
Paint conforming to requirement of Clause 1701.3.8	litre	6.00	149.00	894.00
Add for scaffolding @ 1 per cent of labour cost where required				12.39
				<u>2,592.39</u>

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

324.05
2,916.44

e) Add 1% labour cess on a+b+c+d.

29.16

Cost for 40 sqm = a+b+c+d+e

2,945.60

Rate per sqm = (a+b+c+d+e)/40

73.64

Say Rs.

Say Rs. 74.00

Labour Rate				1,239.00
Add for scaffolding @ 1 per cent of labour cost where required				12.39
				<u>1,251.39</u>

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

156.42
1,407.81

e) Add 1% labour cess

14.08

Cost for 40 sqm

1,421.89

Rate per sqm

35.55

Say Rs. 36.00

35 10.7 1700

Painting on Concrete/Steel Surfaces with Epoxy

Painting two coats including prime coat with epoxy paint of approved brand on concrete/steel surfaces after through cleaning of surface to give an even shade as per drawing and Technical Specification Clause 1701

Unit = sqm

Taking output = 10 sqm

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			a) Labour				
			Mate	day	0.25	210.00	52.50
			Painter (1st Class)	day	0.60	259.00	155.40
			Mazdoor (Unskilled)	day	0.40	210.00	84.00
			b) Material				
			Epoxy primer/Red-oxide	litre	0.60	206.00	123.60
			Epoxy paint	litre	1.25	374.00	467.50
			Add @ 1 per cent on cost of material for scaffolding wherever required				5.91
							<hr/> 888.91
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)				<hr/> 111.11
							<hr/> 1,000.02
			d) Add 1% labour cess on a+b+c.				<hr/> 10.00
			Cost for 10 sqm = (a+b+c+d)				<hr/> 1,010.03
			Rate per sqm = (a+b+c+d)/10				<hr/> 101.00
						Say Rs. 101.00	
			Labour Rate				291.90
							493.90
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				<hr/> 61.74
							<hr/> 555.64
			Add 1% labour cess .				<hr/> 5.56
			Cost for 10 sqm				<hr/> 561.20
			Rate per sqm				<hr/> 56.12
						Say Rs. 56.00	
36	10.8	1700	Painting lines, Dashes, Arrows, etc. on Road 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/concrete surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control as per drawing and Technical Specification Clause 1702				
			Assuming 100 mm width				
			Unit = sqm				
			Taking output = 10 sqm				
			a) Labour				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Mate	day	0.09	210.00	18.90
			Painter 1st Class	day	0.55	259.00	142.45
			Mazdoor (Unskilled)	day	1.55	210.00	325.50
			b) Material				
			Road marking paint as per IS:164	litre	1.48	312.00	461.76
							948.61
			h) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d+e+f+g)				118.58
							1,067.19
			i) Add 1% labour cess on a+b+c+d+e+f+g+h.				10.67
			Cost for 10 sqm = a+b+c+d				1,077.86
			Rate per sqm = (a+b+c+d)/10				107.79
						Say Rs. 108.00	
			Labour Rate				486.85
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				60.86
							547.71
			Add 1% labour cess				5.48
			Cost for 10 sqm				553.18
			Rate per sqm				55.32
						Say Rs. 55.00	
37	10.10	1700	Kilometre Stone				
			Reinforced cement concrete M15 grade kilometre stone/local stone of standard design as per IRC:8 fixing in position including painting and printing, etc as per drawing and Technical Specification Clause 1703				
			i) 5th Kilometre Stone (precast)				
			Unit = each				
			Taking output = 6 Nos.				
			a) M-15 grade of concrete				
			As per item No.12.8 of Chapter 12	cum	2.35	4,906	11,529.10
			b) Steel reinforcement @ 5 kg per sqm				
			As per item No.12.9 of Chapter 12	kg	22.08	70.76	1,562.47
			c) Excavation in soil for foundation				
			As per item No.11.1 of Chapter 11	cum	1.68	199.00	334.32
			d) Painting two coats on concrete surface				
			As per item No.10.5 of Chapter 10	sqm	9.85	73.64	725.35

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			e) lettering on km post (average 30 letters of 10 cm height each)				
			As per item No.10.1 of Chapter 10	per cm high per litre	1,800	0.50	900.00
			Transportation and fixing				
			f) Labour				
			Mate	day	0.26	210.00	54.60
			Mason (1st Class)	day	0.60	315.00	189.00
			Mazdoor (Unskilled)	day	6.00	210.00	1,260.00
			g) Machinery				
			50 HP Tractor with trolley	hour	6.00	581.00	3,486.00
							20,040.84
			h) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d+e+f+g)				2,505.11
							22,545.95
			i) Add 1% labour cess on a+b+c+d+e+f+g+h.				225.46
			Cost for 6 Nos. 5th km stone = a+b+c+d+e+f+g+h+i				22,771.41
			Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i)/6				3,795.23
			Say Rs.			Say Rs. 3,795.00	
			Labour Rate				1,503.60
			Labour rate item No. 10.1				0.45
			Labour rate item No. 10.5				36.00
			Labour rate item No. 11.1				199.00
			Labour rate item No. 12.8				529.00
			Labour rate item No. 12.9				2,348.00
							4,616.05
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				577.01
							5,193.06
			e) Add 1% labour cess on a+b+c+d.				51.93
			Cost for 6 Nos. 5th km stone				5,244.99
			Rate for each 5th km stone				874.16
			Say Rs.			Say Rs. 874.00	

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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ii) Ordinary Kilometer Stone (Precast)

Unit = each

Taking output = 14 Nos.

a) M15 grade of concrete

As per item No.12.8 of Chapter 12 cum 3.77 4,906 18,495.62

b) Steel reinforcement @ 5 kg per sqm

As per item No.12.9 of Chapter 12 kg 26.32 70.76 1,862.51

c) Excavation in soil for foundation

As per item No.11.1 of Chapter 11 cum 2.77 199.00 551.23

d) Painting two coats on concrete surface

As per item No.10.5 of Chapter 10 sqm 11.41 73.64 840.23

e) lettering on km post (average 12 letters of 10 cm height each)

As per item No.10.1 of Chapter 10 per cm high per letter 1,680 0.50 840.00

Transportation and fixing

f) **Labour**

Mate day 0.32 210.00 67.20
Mason (1st Class) day 1.00 315.00 315.00
Mazdoor (Unskilled) day 7.00 210.00 1,470.00

g) **Machinery**

50 HP Tractor with trolley hour 6.00 581.00 3,486.00
27,927.79

h) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d+e+f+g)

3,490.97
31,418.77

i) Add 1% labour cess on a+b+c+d+e+f+g+h.

314.19

Cost for 14 Nos. ordinary km stone = (a+b+c+d+e+ f+g+h+i)

31,732.95

Rate for each ordinary km stone = (a+b+c+d+e+ f+g+h+i)/14

2,266.64

Say Rs.

Say Rs. 2,267.00

Labour Rate

1,852.20

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Labour rate item No. 10.1				0.45
			Labour rate item No. 10.5				36.00
			Labour rate item No. 11.1				199.00
			Labour rate item No. 12.8				529.00
			Labour rate item No. 12.9				2,348.00
							<hr/> 4,964.65
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				<hr/> 620.58
							5,585.23
			Add 1% labour cess				<hr/> 55.85
			Cost for 14 Nos. ordinary km stone				5,641.08
			Rate for each ordinary km stone				402.93
							Say Rs. 403.00
			iii) 200 m stone (precast)				
			Unit = each				
			Taking output = 33 Nos.				
			a) M15 grade of concrete				
			As per item No.12.8 of Chapter 12	cum	1.58	4,906	7,751.48
			b) Steel reinforcement @ 5 kg per sqm				
			As per item No.12.9 of Chapter 12	kg	66.00	70.76	4,670.42
			c) Excavation in soil for foundation				
			As per item No.11.1 of Chapter 11	cum	1.39	199.00	276.61
			d) Painting two coats on concrete surface				
			As per item No.10.5 of Chapter 10	sqm	6.27	73.64	461.72
			e) lettering on km post (average 1 letter of 10 cm height each)				
			As per item No. 10.1 of Chapter 10	per cm per letter	330.00	0.50	165.00
			Transportation and fixing				
			f) Labour				
			Mate	day	0.34	210.00	71.40
			Mason (1st Class)	day	1.50	315.00	472.50

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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			Mazdoor (Unskilled)	day	7.00	210.00	1,470.00
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g) **Machinery**

			50 HP Tractor with trolley	hour	6.00	581.00	3,486.00
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18,825.14

h) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d+e+f+g)

2,353.14

21,178.28

i) Add 1% labour cess on a+b+c+d+e+f+g+h.

211.78

Cost for 33 Nos. 200 m stone =

21,390.06

Rate for each 200 m stone =

648.18

Say Rs. 648.00

Labour Rate	2,013.90
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Labour rate item No. 10.1	0.45
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Labour rate item No. 10.5	36.00
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Labour rate item No. 11.1	199.00
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Labour rate item No. 12.8	529.00
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Labour rate item No. 12.9	2,348.00
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5,126.35

Add 12.5% (Overheads @ 2.5 % + 10% Contractor

640.79

5,767.14

Add 1% labour cess

57.67

Cost for 33 Nos. 200 m stone

5,824.82

Rate for each 200 m stone

176.51

Say Rs. 177.00

38 10.11 1700

Boundary Pillar

Reinforced cement concrete M15 grade boundary pillars/local stone of standard design as per IRC:25, fixed in position including finishing and lettering but excluding painting as per drawing and Technical Specification Clause 1704

Unit = each

Taking output = 57 Nos.

a) M-15 grade of Concrete

As per Item No. 12.8 of Chapter 12	cum	1.25	4,906	6,132.50
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b) Steel reinforcement

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			As per Item No. 12.9 of Chapter 12	kg	79.80	70.76	5,646.97
			c) Excavation in soil				
			As per Item No. 11.1 of Chapter 11	cum	10.72	199.00	2,133.28
			d) lettering, each 10 cm high				
			As per Item No. 10.1 of Chapter 10	per litre per cm high	2,280	0.50	1,140.00
			Transportation and fixing				
			e) Labour				
			Mate	day	0.57	210.00	119.70
			Mazdoor (Unskilled)	day	14.25	210.00	2,992.50
			f) Machinery				
			Tractor with trolley	hour	6.00	581.00	3,486.00
			g) Material				
			Stone spall	cum	11.97	760.00	9,097.20
							<u>30,748.15</u>
			h) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d+e+f+g)				<u>3,843.52</u>
							34,591.67
			i) Add 1% labour cess on a+b+c+d+e+f+g+h.				<u>345.92</u>
			Cost for 57 Nos. boundary pillar = a+b+c+d+e+f+g+h+i				34,937.58
			Rate for each boundary pillar = (a+b+c+d+e+f+g+h+i)/57				612.94
							Say Rs. 613.00
			Labour Rate				3,112.20
			Labour rate item No. 10.1				0.45
			Labour rate item No. 11.1				199.00
			Labour rate item No. 12.8				529.00
			Labour rate item No. 12.9				2,348.00
							<u>6,188.65</u>
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				<u>773.58</u>
							6,962.23
			Add 1% labour cess				<u>69.62</u>
			Cost for 57 Nos. boundary pillar				7,031.85
			Rate for each boundary pillar				123.37
							Say Rs. 123.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
39	10.16	1700	<p>Providing and Fixing 'Logo' of PMGSY Project</p> <p>Providing and fixing of typical PMGSY informatory sign board with Logo as per MORD specifications and drawing. Three MS Plates of 1.6 mm thick, top and middle plate duly welded with MS flat iron 25mm x 5m size on back on edges. The lower plate will be welded with MS angle iron frame of 25mm x 25mm x 5mm. The angle iron frame of the lower most plate and flat iron frame of middle plate will be welded to 2 nos. 75mm x 75 mm of 12 SWG sheet tubes posts duly embedded in cement concrete M-15 grade blocks of 450mm x 450mm x 600mm, 600mm below ground level.</p> <p>The top most diamond plate will be welded to middle plate by 47mm x 47mm of 12 SWG steel plate tube. All M.S. will be stove enameled on both sides. Lettering and printing arrows, border etc. will be painted with ready mixed synthetic enamel paint of superior quality in required shade and colour. All sections of framed posts and steel tube will be painted with primer and two coats of epoxy paint as per drawing Clause 1701 and Annexure 1700.1</p> <p>Unit = Each Taking out put = one typical board</p> <p>(i) Excavation for foundations As per item No. 11.1 of Chapter 11 cum 0.252 199.0 50.15</p> <p>(ii) Cement Concrete M15 grade As per item No. 11.4 of Chapter 11 cum 0.252 4,906.0 1,236.31</p> <p>(iii) Painting on MS Steel tubes with primer and two coats of epoxy paint 2x2.05x.30 = 1.23 1x1.10x188 = 0.21 As per item no. 10.7 of Chapter 10 sqm 1.80 101.00 181.80</p> <p>iv) Printing new letters and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade.</p> <p>Logo Border 60x4x5 = 1200 per cm height per letter</p>				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Figure 60x10 = 600 per cm height per letter				
			Middle plate words 28x5 = 140 per cm height per letter				
			Bottom plate border 150x2x5 = 1500 per cm height per letter				
			Bottom plate border 60x2x5 = 600 per cm height per letter				
			Words 101x2.5 = 252.5				
			Words 80x3 = 240.00				
			Total				
			As per item No.10.1 of Chapter 10	per cm height per litre	4,533	0.50	2,266.25
			a) Labour (for fixing at site)				
			Mate	day	0.03	210.00	6.30
			Mazdoor (Unskilled)	day	0.75	210.00	157.50
			b) Material				
			2 nos. MS tubes 75mx75mm of 12 SWG sheet 2650 mm long	kg	63.15	91.00	5,746.65
			1 No. MS tube 47mm x 47mm of 12 SWG 1100 mm long	kg	4.47	91.00	406.77
			Angle iron 50mm x 50mm x 5 mm for lugs	kg	2.12	91.00	192.92
			1.6 mm thick MS sheet strengthened by 25mm x 5 MS flat iron on logo and middle plate angle iron 25mm x 25mm x 5mm on bottom plate painting with stove enameled paint on both sides as per MORD specifications	sqm	1.44	1,554.0	2,237.76
			Add 3% cost of MS tube and angle iron towards the cost of fabrications, drilling holes, nuts, bolts, etc.				190.39
			c) Machinery				
			Tractor with trolley	hour	0.24	581.00	139.44
							12,812.24
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				1,134.72
							13,946.96

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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e) Add 1% labour cess on a+b+c+d. 139.47

Cost for one Board= 14,086.43
(i+ii+iii+iv+a+b+c+d)

Say Rs. 14,086.00

Labour Rate 163.80

Labour rate item No. 10.1 2,039.63

Labour rate item No. 10.7 100.80

Labour rate item No. 11.1 50.148

Labour rate item No. 11.4 133.308

2,487.68

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

310.96

2,798.64

Add 1% labour cess .

27.99

Cost for one Board 2,826.63

Say Rs. 2,827.00

Chapter – 11

FOUNDATION

Preamble:

- 1 Excavation for structures has been provided by and large by manual means.
- 2 The earth excavated from foundation has been proposed to be backfilled in the foundation trenches except for marshy soil where disposal has been provided.
- 3 For excavation in marshy soil, extra provision of labour for filling with carted earth has been provided in a separate item. Cost of carted earth may be worked out separately if the same is not available from the adjoining area.
- 4 The rock surface for foundations is to be prepared which has been analysed accordingly.
- 5 In case of rock, excavation has been considered upto a depth of 1500 mm for rock of ultimate crushing strength of 10 Mpa or more, which shall be reckoned as hard rock.
- 6 Dewatering has been provided in excavation for foundation on percentage basis. In case less dewatering is required or is not required at all for a particular site condition, the same may be reduced/omitted.
- 7 Mixing of cement concrete has been considered by using concrete mixer with weigh batching facility fitted with water measuring device. It is preferable to use concrete mixes fitted with load cells for weigh batching.
- 8 In remote areas, for isolated slab culvert/box culvert upto 2 m span, concrete can be hand mixed in accordance with Clause 806 of MORD Specifications. Therefore, in the analysis, for items of concrete, the alternative of hand mixing has also been considered.
- 9 Steel reinforcement for cement concrete work is required to be provided separately. The rate for the same has been analysed using HYSD and TMT bars.
- 10 Necessary safety precautions shall be taken for excavation for open foundation for which guidance may be taken from IS:3764. Cost of shoring and shuttering has been provided on percentage basis, which may be adjusted according to site condition.
- 11 For brick masonry work, clay fly ash bricks of approved type can be used in accordance with Section 600 of MORD Specifications and rate may be adopted accordingly.
- 12 Rates of all materials used in the analysis/schedule are on lowest prevailing market rates as finalized and approved by the committee constituted and should include cartage from crusher.
- 13 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 11 FOUNDATION

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
40	11.1	300	Excavation for Structures Earthwork in excavation for structures as per drawing and technical specifications Clause 305.1 including setting out, construction of shoring and bracing, removal of stumps and other deleterious material and disposal upto a lead of 50 m, dressing of sides and bottom and backfilling in trenches with excavated suitable material. I. Ordinary soil (i) Upto 3 m depth Unit = cum Taking output = 10 cum a) Labour Mate day 0.32 210.00 67.20 Mazdoor (Unskilled) day 8.00 210.00 1,680.00 1,747.20 b) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a) 218.40 1,965.60 c) Add 1% labour cess on a+b. 19.66 Cost for 10 cum = a+b+c 1,985.26 Rate per cum = (a+b+c)/10 198.53 Say Rs. 199.00				
40 (II)			II. Ordinary rock (not requiring blasting) Upto 3 m depth Unit = cum Taking output = 10 cum a) Labour Mate day 0.40 210.00 84.00 Mazdoor (Unskilled) day 10.00 210.00 2,100.00 2,184.00 b) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a) 273.00 2,457.00 c) Add 1% labour cess on a+b. 24.57 Cost for 10 cum = a+b+c 2,481.57 Rate per cum = (a+b+c)/10 248.16				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Say Rs. 248.00

40 (III)

III. Hard rock (requiring blasting)

Upto 3 m depth including 1.5 m depth

Unit = cum

Taking output = 10 cum

a) Labour

Mate	day	0.53	210.00	111.30
Driller	day	0.84	210.00	176.40
Blaster	day	0.40	259.00	103.60
Mazdoor (Unskilled)	day	12.00	210.00	2,520.00

b) Machinery

Air compressor 210 cfm with 2 hour jack hammers for drilling	1.00	465.00	465.00
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c) Material

Gelatin 80%	kg	3.50	98.00	343.00
Detonator electric	Nos.	14.00	16.00	224.00
				<u>3,943.30</u>

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

492.91
4,436.21

e) Add 1% labour cess on a+b+c+d.

44.36

Cost for 10 cum = a+b+c+d+e

4,480.57

Rate per cum = (a+b+c+d+e)/10

448.06

Say Rs. 448.00

Labour Rate

2,911.30

d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)

363.91
3,275.21

e) Add 1% labour cess on a+b+c+d.

32.75

Cost for 10 cum

3,307.96

Rate per cum

330.80

Say Rs. 331.00

40 (IV)

IV. Hard rock (blasting prohibited)

Upto 3 m depth including 1.5 m depth in hard rock

Unit = cum

Taking output = 10 cum

a) Labour

Mate	day	0.20	210.00	42.00
Mazdoor (Unskilled)	day	5.00	210.00	1,050.00

b) Machinery

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Air compressor 210 cfm with 2 hour jack hammers of pneumatic breaker		10.00	465.00	4,650.00
							5,742.00
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)			717.75	6,459.75
			d) Add 1% labour cess on a+b+c.			64.60	6,524.35
			Cost for 10 cum = a+b+c+d				652.43
			Rate per cum = a+b+c+d/10				652.43
			Labour Rate				1,092.00
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)			136.50	1,228.50
			e) Add 1% labour cess on a+b+c+d.			12.29	1,240.79
			Cost for 10 cum				124.08
			Rate per cum				
							Say Rs. 124.00

- 41 11.4 800 & 1200 Providing concrete for plain/reinforced concrete in open foundations complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203

I. P.C.C grade M 10

(i) Nominal mix 1:3:6

Unit = cum

a) Material

Cement	t	0.250	7,688.00	1,922.00
Coarse sand	cum	0.48	1,101.00	528.48
40 mm aggregate	cum	0.576	1,069.00	615.74
20 mm aggregate	cum	0.288	1,276.00	367.49
10 mm aggregate	cum	0.096	1,281.00	122.98

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.10	315.00	31.50
Mazdoor (Unskilled)	day	1.63	210.00	342.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell.	hour	0.40	350.00	140.00
				4,143.99

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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d) **Formwork @ 4% on cost of material, labour and machinery (a+b+c)** 165.76

4,309.75

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)

538.72

4,848.47

f) Add 1% labour cess on a+b+c+d+e.

48.48

Rate per cum =

4,896.95

Say Rs. 4,897.00

Labour Rate

447.30

Formwork @ 4%

17.89

465.19

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

58.15

523.34

f) Add 1% labour cess

5.23

Rate per cum

528.57

Say Rs. 529.00

II. P.C.C grade M 15

(i) Nominal mix (1:2.5:5)

Unit = cum

a) Material

Cement	t	0.275	7,688.00	2,114.20
Coarse sand	cum	0.48	1,101.00	528.48
40 mm aggregate	cum	0.48	1,069.00	513.12
20 mm aggregate	cum	0.24	1,276.00	306.24
10 mm aggregate	cum	0.08	1,281.00	102.48

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.10	315.00	31.50
Mazdoor (Unskilled)	day	1.63	210.00	342.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	350.00	140.00
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d) **Formwork @ 4% on cost of material, labour and machinery (a+b+c)**

166.07

4,317.89

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)

539.74

4,857.63

f) Add 1% labour cess on a+b+c+d.

48.58

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Rate per cum = a+b+c+d+e+f 4,906.21

Say Rs. 4,906.00

Labour Rate 447.30

Formwork @ 4% 17.89

465.19

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) 58.15

523.34

f) Add 1% labour cess 5.23

Rate per cum 528.57

Say Rs. 529.00

III. P.C.C. grade M 20

(i) Nominal mix (1:2:4)

Unit = cum

a) Material

Cement t 0.33 7,688.00 2,537.04

Sand cum 0.45 1,101.00 495.45

40 mm aggregate cum 0.36 1,069.00 384.84

20 mm aggregate cum 0.36 1,276.00 459.36

10 mm aggregate cum 0.18 1,281.00 230.58

b) Labour

Mate day 0.08 210.00 16.80

Mason (1st Class) day 0.10 315.00 31.50

Mazdoor (Unskilled) day 1.63 210.00 342.30

Bhisti day 0.27 210.00 56.70

c) Machinery

Concrete mixer 0.4/0.28 cum hour capacity 0.40 350.00 140.00

d) Formwork @ 4% on (a+b+c) 187.78

4,882.35

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d) 610.29

5,492.65

f) Add 1% labour cess on a+b+c+d. 54.93

Rate per cum = a+b+c+d+e+f 5,547.57

Say Rs. 5,548.00

Labour Rate 447.30

Formwork @ 4% 17.89

465.19

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) 58.15

523.34

f) Add 1% labour cess 5.23

Rate per cum 528.57

Say Rs. 529.00

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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IV R.C.C grade M 20

Unit = cum

a) Material

Cement	t	0.35	7,688.00	2,690.80
Coarse sand	cum	0.45	1,101.00	495.45
20 mm aggregate	cum	0.54	1,276.00	689.04
10 mm aggregate	cum	0.36	1,281.00	461.16

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.12	315.00	37.80
Mazdoor (Unskilled)	day	1.73	210.00	363.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Concrete mixer 0.4/0.28 cum	hour	0.40	350.00	140.00
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d) Formwork @ 4% on (a+b+c)

198.04
<u>5,149.09</u>

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)

643.64
<u>5,792.73</u>

f) Add 1% labour cess on a+b+c+d.

57.93

Rate per cum = (a+b+c+d+e+f)

<u>5,850.66</u>

Say Rs. 5,851.00

Labour Rate

474.60

Formwork @ 4%

18.98
<u>493.58</u>

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

61.70
<u>555.28</u>

f) Add 1% labour cess

5.55

Rate per cum

<u>560.83</u>

Say Rs. 561.00

V. R.C.C. grade M 25

Unit = cum

a) Material

Cement	t	0.404	7,688.00	3,105.95
Coarse sand	cum	0.45	1,101.00	495.45
20 mm aggregate	cum	0.54	1,276.00	689.04
10 mm aggregate	cum	0.36	1,281.00	461.16

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.12	315.00	37.80
Mazdoor (Unskilled)	day	1.73	210.00	363.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	350.00	140.00
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d) Formwork @ 3.75% on (a+b+c)

201.23

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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5,567.43

- e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)

695.93

6,263.36

- f) Add 1% labour cess on a+b+c+d.

62.63

Rate per cum = a+b+c+d+e+f

6,326.00

Say Rs. 6,326.00

Labour Rate

474.60

Formwork @ 3.75%

17.80

492.40

- e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

61.55

553.95

- f) Add 1% labour cess

5.54

Rate per cum

559.49

Say Rs. 559.00

VI P.C.C. grade M 15

- l) Nominal mix (1:2.5:5)

Unit = cum

a) Material

Cement	t	0.275	7,688.00	2,114.20
Coarse sand	cum	0.48	1,101.00	528.48
40 mm aggregate	cum	0.48	1,069.00	513.12

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.10	315.00	31.50
Mazdoor (Unskilled)	day	1.63	210.00	342.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Concrete mixer 0.4/0.28 capacity	cum hour	0.40	350.00	140.00
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d) Formwork @ 4% on (a+b+c)

149.72

3,892.82

- e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)

486.60

4,379.43

- f) Add 1% labour cess on a+b+c+d+e.

43.79

Rate per cum = a+b+c+d+e+f

4,423.22

Say Rs. 4,423.00

Labour Rate

447.30

Formwork @ 4%

17.89

465.19

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

58.15

523.34

f) Add 1% labour cess

5.23

Rate per cum

528.57

Say Rs. 529.00

42 11.6 700 & 1200 **Stone masonry work in cement mortar in foundation complete as per drawing and technical specifications Clauses 702, 704, 1202 & 1203.**

(i) **In 1:4 cement mortar**

Unit = cum

a) Material

Stone for C.R. masonry 1st sort cum 1.10 1,368.00 1,504.80

Through bond stone (7 nos. 0.24 x 0.24 x 0.39 = 0.16 cum) 7.00 30.00 210.00

Cement mortar 1:4 (Rate as in item 11.5 II) cum 0.30 4,291.69 1,287.51

b) Labour

Mate day 0.14 210.00 29.40

Mason (1st Class) day 1.50 315.00 472.50

Mazdoor (Unskilled) day 2.10 210.00 441.00

Bhisti day 0.08 210.00 16.80

3,962.01

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

495.25

4,457.26

d) Add 1% labour cess on a+b+c.

44.57

Rate per cum = (a+b+c+d)

4,501.83

Say Rs. 4,502.00

Labour Rate 959.70

Labour in CM 1:4 214.20

1,173.90

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

146.74

1,320.64

d) Add 1% labour cess

13.21

Rate per cum

1,333.84

Say Rs. 1,334.00

(iii) **In cement mortar (1:5)**

Unit = cum

a) Material

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Stone for CR masonry 1st sort	cum	0.60	1,368.00	820.80
			Through and bond stone (7 no x 0.24 x 0.24 m x 0.39 m = 0.16 cum)	Nos.	7.00	30.00	210.00
			Spalls/blasted rubbles	cum	0.50	766.00	383.00
			Cement mortar (Rate same as in item 12.1 III)	cum	0.33	3,753.53	1,238.66
			b) Labour				
			Mate	day	0.14	210.00	29.40
			Mason 1st Class	day	1.30	315.00	409.50
			Mazdoor (Unskilled)	day	2.00	210.00	420.00
			Bhisti	day	0.08	210.00	16.80
			As for scaffolding @ 5% on (a+b)				176.41
							<hr/> 3,704.57
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				463.07
							<hr/> 4,167.64
			d) Add 1% labour cess on a+b+c.				41.68
			Rate per cum = a+b+c+d				<hr/> 4,209.32
						Say Rs. 4,209.00	
			Labour Rate			875.70	
			Morter 1:5			214.20	
			Scaffolding @ 5%			54.50	
						<hr/> 1,144.40	
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				143.05
							<hr/> 1,287.44
			d) Add 1% labour cess				12.87
			Rate per cum				<hr/> 1,300.32
						Say Rs. 1,300.00	

- 43 11.11 800 & 1200 **Providing and Laying concrete for plain/reinforced concrete in open foundations complete as per drawing and technical specification clauses 802, 803, 1202 and 1203**
P.C.C nominal mix 1:4:8 (25 mm aggregates)

Unit = cum

a) Material				
Cement	t	0.17	7,688.00	1,306.96
Course Sand	cum	0.47	1,101.00	517.47
Aggregate 25mm	cum	0.65	1,276.00	829.40
Aggregate 20mm	cum	0.24	1,276.00	306.24

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			b) Labour				
			Mate	day	0.08	210.00	16.80
			Mason 1st class	day	0.10	315.00	31.50
			Mazdoor (Unskilled)	day	1.63	210.00	342.30
			Bhisti	day	0.27	210.00	56.70
			c) Machinery				
			Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell	hour	0.40	350.00	140.00
			d) Farm work@4% on (a+b+c)				141.89
							3,689.26
			e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)				461.16
							4,150.42
			f) Add 1% labour cess on a+b+c+d+e.				41.50
			Cost per cum				4,191.93
						Say Rs. 4,192.00	
			Labour Rate				447.30
			Farm work @ 4%				17.89
							465.19
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				58.15
							523.34
			Add 1% labour cess				5.23
			Rate per cum				528.57
						Say Rs. 529.00	

44 11.13 800 & 1200 **Providing and Laying concrete for plain/reinforced concrete in open foundations complete as per drawing and technical specification clauses 802, 803, 1202 and 1203**
P.C.C nominal mix 1:6:12 (40 mm aggregates)

Unit = cum

a) Material					
Aggregate 40mm	cum	0.65	1,069.00	694.85	
Aggregate 20mm	cum	0.24	1,276.00	306.24	
Course Sand	cum	0.47	1,101.00	517.47	
Cement	t	0.11	7,688.00	845.68	
b) Labour					
Mate	day	0.08	210.00	16.80	
Mason 1st class	day	0.10	315.00	31.50	
Mazdoor (Unskilled)	day	1.63	210.00	342.30	
Bhisti	day	0.27	210.00	56.70	
c) Machinery					

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell	hour	0.40	350.00	140.00
			d) Farm work@4% on (a+b+c)				118.06
							3,069.60
			e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)			383.70	3,453.30
			f) Add 1% labour cess on a+b+c+d.			34.53	3,487.83
			Cost per cum				3,487.83
						Say Rs. 3,488.00	
			Labour Rate			447.30	
			Farm work @ 4%			17.89	465.19
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)			58.15	523.34
			Add 1% labour cess			5.23	528.57
			Rate per cum				528.57
						Say Rs. 529.00	

45	11.14	800 & 1200	Providing and Laying cement concrete 1:5:10 with 15% plums and curing complete including the cost of farmwork for plain/reinforced concrete in retaining walls, breast walls, the size of plum should be 150 to 300 mm as per drawing and HP.PWD technical specifications.				
			Unit = cum				
			a) Material				
			Aggregate 40mm	cum	0.60	1,069.00	641.40
			Aggregate 20mm	cum	0.22	1,276.00	280.72
			Course Sand	cum	0.47	1,101.00	517.47
			Cement	t	0.13	7,688.00	999.44
			Plum	cum	0.15	760.00	114.00
			b) Labour				
			Mate	day	0.08	210.00	16.80
			Mason 1st class	day	0.10	315.00	31.50
			Mazdoor (Unskilled)	day	1.63	210.00	342.30
			Bhisti	day	0.27	210.00	56.70
			c) Machinery				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell	hour	0.40	350.00	140.00
			d) Farm work@4% on (a+b+c)				125.61
							3,265.94
			e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)			408.24	
							3,674.19
			f) Add 1% labour cess on a+b+c+d+e.			36.74	
			Cost per cum				3,710.93
						Say Rs. 3,711.00	
			Labour Rate			447.30	
			Farm work @ 4%			17.89	
							465.19
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)			58.15	
							523.34
			Add 1% labour cess			5.23	
			Rate per cum				528.57
						Say Rs. 529.00	
46	11.15	800 & 1200	Providing and Laying cement concrete 1:4:8 with 15% plums and curing complete including the cost of farmwork for plain/reinforced concrete in retaining walls, breast walls, the size of plum should be 150 to 300 mm as per drawing and HP.PWD technical specifications.				
			Unit = cum				
			a) Material				
			Aggregate 40mm	cum	0.55	1,069.00	587.95
			Aggregate 20mm	cum	0.20	1,276.00	255.20
			Course Sand	cum	0.47	1,101.00	517.47
			Cement	t	0.17	7,688.00	1,306.96
			Plum	cum	0.14	760.00	106.40
			b) Labour				
			Mate	day	0.08	210.00	16.80
			Mason 1st class	day	0.10	315.00	31.50
			Mazdoor (Unskilled)	day	1.63	210.00	342.30
			Bhisti	day	0.27	210.00	56.70
			c) Machinery				
			Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell	hour	0.40	350.00	140.00
			d) Farm work@4% on (a+b+c)				134.45

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
							3,495.73
			e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)			436.97	3,932.70
			f) Add 1% labour cess on a+b+c+d+e.			39.33	3,972.02
			Cost per cum				3,972.02
						Say Rs. 3,972.00	
			Labour Rate			447.30	
			Farm work @ 4%			17.89	465.19
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)			58.15	523.34
			Add 1% labour cess			5.23	528.57
			Rate per cum				528.57
						Say Rs. 529.00	
47	11.16	800 & 1200	Providing and Laying cement concrete 1:5:10(1 cement :5 Sand :10 graded stone aggregate 40 mm nominal size) with 15% plams, the size of plum should be 150 to 300 mm and curing complete including the cost of Farm work with steel plates and filled by bitumen drums in dressiest as per drawing and HP.PWD technical specifications. Detail of cost for one paraphets Unit = cum				
			a) Excavation in earth work				
			1x1.85x0.45x0.15=0.12 cum	cum	0.12	124.00	14.88
			Rate as per item No. 8.3(1)(A)				
			b) Providing and laying C.C 1:5:10 with 15% plam 40 mm nominal size				
			1x1.85x0.45x0.60=0.50 cum				
			Less parapet				
			1x1.85x0.45x0.15=0.02 cum				
			Net Qty: 0.48 cum	cum	0.48	3,711.00	1,781.28
			Rate as per item No.				
			c) Supplying of bitumen drums from PWD Store to site of work 2 Nos.	Nos.	2.00	150.00	300.00
			d) Labour for carriage of empty drums filling with earth and stones including coping etc.	day	2.00	210.00	420.00
			e) Sundries				100.00
			Cost per one Parapets on (a+b+c+d+e)				2,616.16

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Say Rs. 2,616.00

Labour Rate 420.00

Labour for earth work 13.00

Labour for 1:5:10 with plam 529.00

Cost for one Parapet 962.00

Say Rs. 962.00

Construction of parapets with mechanically mixed and vibrated cement concrete 1:2.5:5 (1 cement : 2.5 sand:5 graded crushed stone3 aggregate 40 mm nominal size) , curing complet including cost of form work as per drawing supplied by the Engineer-in-Chief letter No. 2050-2157 dated 20-05-1995.

Detail of cost for Each

Excavation in structure

Rate as per iotem No. Cum 0.20 199.00 39.80

P/L PCC 1 : 2.5: 5 (M-15)

Rate as per iotem No. Cum 0.670 4,906.00 3287.02

Cost for each 3326.82

Say Rs. 3,327.00

Construction of hill side (V-shaped) drain in accordance with the requirement of specifications true to line and grade diamentions and other particulars as per drawing and technical specifications Clause 1606.1 in cement concrete 1 : 3 : 6 (1 cement : 3 sand : 6 graded crushed stone aggregate 20 mm nominal size, with thickness of concrete 10cm of size 45cm X 25cm including cost of earth work in all kinds of soil and cost of form work with steel plates as per MORD specifications including carriage of materials in all leads and lifts as per the directions of Engineer-in-Charge.

Detail of cost for 10 Rmt.

Excavation in structure

Rate as per iotem No. Cum 0.83 199.00 165.17

P/L CC 1 : 3 : 6 (M-10)

Rate as per iotem No. Cum 0.774 4,897.00 3790.278

Rate for 10 running metre 3955.448

Rate per metre 395.54

Say Rs. 396.00

Chapter – 12

SUBSTRUCTURE

Preamble:

- 1 The cost of formwork will vary with the height and cross-section of the substructure. Provision has been made accordingly.
- 2 As the higher grade of concrete is costlier, the provision made for formwork on percentage basis has been suitably adjusted to make it compatible with other grades.
- 3 Filter media and backfilling behind abutment are required to be provided as per guidelines in IRC:78- 2000.
- 4 Bearing shall be set truly level so as to have full and even seating.
- 5 The bearing should be procured only from those manufacturers who have been pre-qualified by MORTH.
- 6 For spans in gradient, the soffit shall be made horizontal specially at the supports and the bearing, where provided, shall be placed horizontally.
- 7 Weep holes shall be provided as per specifications.
- 8 For elastomeric bearings, the concrete surface shall be leveled such that the variation is not more than 1.5 mm from a straight edge placed in any direction across the area.
- 9 Note Nos. 7 to 13 of Chapter 11 will hold good for this Chapter also.

Chapter – 12 SUBSTRUCTURE

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
48	12.2	600	Pointing with cement mortar (1:3) on brickwork as per drawing and technical specification Clauses 613.3 and 1204				
			Unit = 10 sqm Taking output = 10 sqm				
			a) Material				
			Cement mortar 1:3 (Rate as in item 11.5. I)	cum	0.03	5,291.00	158.73
			b) Labour				
			Mate	day	0.04	210.00	8.40
			Mason 1st Class	day	0.50	315.00	157.50
			Mazdoor (Unskilled)	day	0.50	210.00	105.00
			Bhisti	day	0.20	210.00	42.00
							<u>471.63</u>
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				<u>58.95</u>
							530.58
			d) Add 1% labour cess on a+b+c.				<u>5.31</u>
			Rate per 10 sqm = (a+b+c+d)				<u>535.89</u>
						Say Rs. 536.00	
			Labour Rate				312.90
			Morter 1:3				<u>6.43</u>
							319.33
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				<u>39.92</u>
							359.24
			d) Add 1% labour cess.				<u>3.59</u>
			Rate per 10 sqm				<u>362.83</u>
						Say Rs. 363.00	

49	12.4	600	Plastering with cement mortar (1:4), 15 mm thick on brickwork in substructure as per technical specification Clauses 613.4 & 1204				
			Unit = 10 sqm Taking output = 10 sqm				
			a) Material				
			Cement mortar 1:4 (Rate as in item 11.5 II)	cum	0.24	4,291.69	1,030.01
			b) Labour				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Mate	day	0.06	210.00	12.60
			Mason 1st Class	day	0.60	315.00	189.00
			Mazdoor (Unskilled)	day	0.60	210.00	126.00
			Bhisti	day	0.30	210.00	63.00
							<u>1,420.61</u>
		c)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				<u>177.58</u>
							1,598.18
		d)	Add 1% labour cess on a+b+c.				<u>15.98</u>
			Rate per 10 sqm = a+b+c+d				1,614.16
				Per Sqm			161.42
						Say Rs. 161.00	
			Labour Rate				390.60
			Morter 1:4				214.20
							604.80
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				<u>75.60</u>
							680.40
			Add 1% labour cess.				<u>6.80</u>
			Rate per 10 sqm				687.20
				Per Sqm			68.72
						Say Rs. 69.00	
50	12.6	700	Construction of dry rubble masonry for retaining walls, breast walls, revetment walls and parapets etc. for sub structure and super structure complete as per drawing and technical specification clauses 704.6 and 1302.5				
			Unit = cum				
			Taking output = 10 sqm				
		a)	Material				
			Stone for R/R masonry	cum	1.00	1,170.00	1,170.00
			Through and bond stone	Nos.	7.00	30.00	210.00
		b)	Labour				
			Mate	day	0.12	210.00	25.20
			Mason 1st Class	day	1.20	315.00	378.00
			Mazdoor (Unskilled)	day	1.80	210.00	378.00
			Bhisti	day	0.08	210.00	16.80
		c)	Add for scaffolding @ 5 per cent on				<u>108.90</u>
							2,286.90
		d)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				<u>285.86</u>
							2,572.76

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			e) Add 1% labour cess on a+b+c+d.				25.73
			Rate per 10 sqm = a+b+c+d				2,598.49
						Say Rs. 2,598.00	
			Labour Rate			798.00	
			Scaffolding @ 5%			39.90	
							837.90
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)			104.74	
							942.64
			Add 1% labour cess			9.43	
			Rate per 10 sqm				952.06
						Say Rs. 952.00	
51	12.7	700	Stone masonry in cement mortar for substructure complete as per drawing & technical specification Clauses 702, 704, 1202 and 1204				
			I. Coursed rubble masonry (1st sort)				
			(i) In 1:3 cement mortar				
			Unit = cum				
			a) Material				
			Stone for CR masonry 1st sort	cum	1.10	1,368.00	1,504.80
			Through and bond stone (7 no x 0.24 x 0.24 m x 0.39 m = 0.16 cum)	Nos.	7.00	30.00	210.00
			Cement mortar (Rate as in item 11.5. I)	cum	0.30	5,291.13	1,587.34
			b) Labour				
			Mate	day	0.14	210.00	29.40
			Mason 1st Class	day	1.50	315.00	472.50
			Mazdoor (Unskilled)	day	2.10	210.00	441.00
			Bhisti	day	0.08	210.00	16.80
			Add for scaffolding @ 5 per cent of cost of material (a) and labour (b) (a+b)				213.09
							4,474.93
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				559.37
							5,034.30
			d) Add 1% labour cess on a+b+c.				50.34
			Rate per cum = a+b+c+d				5,084.64

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Say Rs. 5,085.00

Labour Rate		959.70
Morter 1:3		214.20
Scaffolding @ 5%		58.70
		<u>1,232.60</u>
Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)		154.07
		<u>1,386.67</u>
Add 1% labour cess		13.87
		<u>1,400.54</u>

Say Rs. 1,401.00

(ii) **In 1:4 cement mortar**

Unit = cum

a) Material

Stone for CR masonry 1st sort	cum	1.10	1,368.00	1,504.80
Through and bond stone (7 no x 0.24 x 0.24 m x 0.39 m = 0.16 cum)	Nos.	7.00	30.00	210.00
Cement mortar (Rate as in item 11.5 II)	cum	0.30	4,291.69	1,287.51

b) Labour

Mate	day	0.14	210.00	29.40
Mason 1st Class	day	1.50	315.00	472.50
Mazdoor (Unskilled)	day	2.10	210.00	441.00
Bhisti	day	0.08	210.00	16.80
Add for scaffolding @ 5 per cent of cost of material (a) and labour (b) 5% on (a+b)				198.10
				<u>4,160.11</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

520.01
4,680.12

d) Add 1% labour cess on a+b+c.

46.80

Rate per cum = a+b+c+d

4,726.92

Say Rs. 4,727.00

Labour Rate		959.70
Morter 1:4		214.20
Scaffolding @ 5%		58.70
		<u>1,232.60</u>
Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)		154.07
		<u>1,386.67</u>
Add 1% labour cess		13.87
		<u>13.87</u>

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Rate per cum

1,400.54

Say Rs. 1,401.00

(iii) **In cement mortar (1:5)**

Unit = cum

a) Material

Stone for CR masonry 1st sort cum 0.60 1,368.00 820.80

Through and bond stone Nos. 7.00 30.00 210.00
(7 no x 0.24 x 0.24 m x 0.39 m = 0.16 cum)

Spalls/blasted rubbles cum 0.50 766.00 383.00

Cement mortar (Rate same as in item 12.1 III) cum 0.33 3,754.00 1,238.82

b) Labour

Mate day 0.14 210.00 29.40

Mason 1st Class day 1.30 315.00 409.50

Mazdoor (Unskilled) day 2.00 210.00 420.00

Bhisti day 0.08 210.00 16.80

As for scaffolding @ 5% on (a+b) 176.42

3,704.74

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

463.09

4,167.83

d) Add 1% labour cess on a+b+c.

41.68

Rate per cum = a+b+c+d

4,209.51

Say Rs. 4,210.00

Labour Rate 875.70

Morter 1:5 214.20

Scaffolding @ 5% 54.50

1,144.40

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

143.05

1,287.44

Add 1% labour cess

12.87

Rate per cum

1,300.32

Say Rs. 1,300.00

(iv) **In cement mortar 1:6**

a) Material

Stone for C.R masonry (1st sort) cum 1.10 1,368.00 1,504.80

Through and bond stone (7 Nos 7.00 30.00 210.00

Cement mortar 1:6 (11.6-III) cum 0.30 3,292.25 987.68

b) Labour

Mate day 0.14 210.00 29.40

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Mason 1st Class	day	1.50	315.00	472.50
			Mazdoor (Unskilled)	day	2.10	210.00	441.00
			Bhisti	day	0.08	210.00	16.80
			Add for scaffolding @ 5 per cent on (a+b)				183.11
							<hr/> 3,845.28
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				<hr/> 480.66
							<hr/> 4,325.94
			d) Add 1% labour cess on a+b+c.				<hr/> 43.26
			Rate per cum (a+b+c+d)				<hr/> 4,369.20
						Say Rs. 4,369.00	
			Labour Rate				959.70
			Labour in CM 1:6				214.20
			Scaffolding @ 5%				<hr/> 58.70
							<hr/> 1,232.60
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				<hr/> 154.07
							<hr/> 1,386.67
			Add 1% labour cess				<hr/> 13.87
			Rate per cum				<hr/> 1,400.54
						Say Rs. 1,401.00	
II. Coursed Rubble masonry (2nd							
			(i) In cement mortar (1:3)				
			Unit = cum				
			a) Material				
			Stone for CR masonry 2nd sort	cum	0.60	1,303.00	781.80
			Through and bond stone (7 no x 0.24 x 0.24 m x 0.39 m = 0.16 cum)	Nos.	7.00	30.00	210.00
			Spalls/blasted rubbles	cum	0.50	751.00	375.50
			Cement mortar (Rate as in item 11.5 I)	cum	0.33	5,291.13	1,746.07
			b) Labour				
			Mate	day	0.14	210.00	29.40
			Mason 1st Class	day	1.30	315.00	409.50
			Mazdoor (Unskilled)	day	2.00	210.00	420.00
			Bhisti	day	0.08	210.00	16.80
			Add for scaffolding @ 5 per cent of cost of material (a) and labour (b)				199.45
							<hr/> 4,188.53

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				523.57
							4,712.09
			d) Add 1% labour cess on a+b+c.				47.12
			Rate per cum = a+b+c+d				4,759.21
						Say Rs. 4,759.00	
			Labour Rate				875.70
			Morter 1:3				214.20
			Scaffolding @ 5%				54.50
							1,144.40
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				143.05
							1,287.44
			Add 1% labour cess				12.87
			Rate per cum				1,300.32
						Say Rs. 1,300.00	
			(ii) In 1:4 cement mortar				
			Unit = cum				
			a) Material				
			Stone for CR masonry 2nd sort	cum	0.60	1,303.00	781.80
			Through and bond stone (7 no x 0.24 x 0.24 m x 0.39 m = 0.16 cum)	Nos.	7.00	30.00	210.00
			Spall/blasted rubble	cum	0.50	751.00	375.50
			Cement mortar (Rate same as in item 11.5 II)	cum	0.33	4,291.69	1,416.26
			b) Labour				
			Mate	day	0.14	210.00	29.40
			Mason 1st Class	day	1.30	315.00	409.50
			Mazdoor (Unskilled)	day	2.00	210.00	420.00
			Bhisti	day	0.08	210.00	16.80
			Add for scaffolding @ 5 per cent of cost of material (a) and labour (b)				182.96
							3,842.22
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				480.28
							4,322.50
			d) Add 1% labour cess on a+b+c.				43.22
			Rate per cum = a+b+c+d				4,365.72
						Say Rs. 4,366.00	
			Labour Rate				875.70
			Morter 1:4				214.20
			Scaffolding @ 5%				54.50

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
							1,144.40
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				143.05
							1,287.44
			Add 1% labour cess				12.87
			Rate per cum				1,300.32
						Say Rs. 1,300.00	
			(iii) In cement mortar (1:5)				
			Unit = cum				
			a) Material				
			Stone for CR masonry 2nd sort	cum	0.60	1,303.00	781.80
			Through and bond stone (7 no x 0.24 x 0.24 m x 0.39 m = 0.16 cum)	Nos.	7.00	30.00	210.00
			Spall/blasted rubble	cum	0.50	751.00	375.50
			Cement mortar (Rate same as in item 12.1 III)	cum	0.33	3,754.00	1,238.82
			b) Labour				
			Mate	day	0.14	210.00	29.40
			Mason 1st Class	day	1.30	315.00	409.50
			Mazdoor (Unskilled)	day	2.00	210.00	420.00
			Bhisti	day	0.08	210.00	16.80
			Add for scaffolding @ 5 per cent on (a+b)				174.09
							3,655.91
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				456.99
							4,112.90
			d) Add 1% labour cess on a+b+c.				41.13
			Rate per cum = a+b+c+d				4,154.03
						Say Rs. 4,154.00	
			Labour Rate				875.70
			Morter 1:5				214.20
			Scaffolding @ 5%				54.50
							1,144.40
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				143.05
							1,287.44
			Add 1% labour cess				12.87
			Rate per cum				1,300.32
						Say Rs. 1,300.00	
			(iv) In cement mortar 1:6				
			a) Material				
			Stone for C.R masonry (2nd sort)	cum	0.60	1,303.00	781.80

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Through and bond stone (7	Nos	7.00	30.00	210.00
			Spalls/blasted rubbles	cum	0.50	751.00	375.50
			Cement mortar 1:6 (11.6-III)	cum	0.33	3,292.25	1,086.44
			b) Labour				
			Mate	day	0.14	210.00	29.40
			Mason 1st Class	day	1.30	315.00	409.50
			Mazdoor (Unskilled)	day	2.00	210.00	420.00
			Bhisti	day	0.08	210.00	16.80
			Add for scaffolding @ 5 per cent on				166.47
							3,495.91
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				436.99
							3,932.90
			d) Add 1% labour cess on a+b+c.				39.33
			Rate per cum (a+b+c+d)				3,972.23
						Say Rs. 3,972.00	
			Labour Rate				875.70
			Labour in CM 1:6				214.20
			Scaffolding @ 5%				54.50
							1,144.40
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				143.05
							1,287.44
			Add 1% labour cess				12.87
			Rate per cum				1,300.32
						Say Rs. 1,300.00	

III. Random rubble masonry

(iii) In cement mortar (1:5)

Unit = cum

a) Material

Stone for RR masonry	cum	1.00	1,170.00	1,170.00
Through and bond stone (7 no x 0.24 x 0.24 m x 0.39 m = 0.16 cum)	Nos.	7.00	30.00	210.00
Cement mortar (Rate same as in item 12.1 III)	cum	0.33	3,754.00	1,238.82

b) Labour

Mate	day	0.12	210.00	25.20
Mason 1st Class	day	1.20	315.00	378.00
Mazdoor (Unskilled)	day	1.80	210.00	378.00
Bhisti	day	0.08	210.00	16.80
Add for scaffolding @ 5 per cent on (a+b)				170.84

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
							3,587.66
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)			448.46	4,036.12
			d) Add 1% labour cess on a+b+c.			40.36	4,076.48
			Rate per cum = a+b+c+d				Say Rs. 4,076.00
			Labour Rate			798.00	
			Morter 1:5			214.20	
			Scaffolding @ 5%			50.61	1,062.81
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)			132.85	1,195.66
			Add 1% labour cess			11.96	1,207.62
			Rate per cum				Say Rs. 1,208.00
(iv)			In cement mortar 1:6				
			Unit=cum				
			a) Material				
			Stone for R.R masonry	cum	1.00	1,170.00	1,170.00
			Through and bond stone (7 Nos.0.24x0.24x0.39=0.16 cum)	(7 Nos	7.00	30.00	210.00
			Cement mortar 1:6 (11.6-III)	cum	0.33	3,292.25	1,086.44
			b) Labour				
			Mate	day	0.12	210.00	25.20
			Mason 1st Class	day	1.20	315.00	378.00
			Mazdoor (Unskilled)	day	1.80	210.00	378.00
			Bhisti	day	0.08	210.00	16.80
			c) Add for scaffolding @ 5 per cent on (a+b)				163.22
							3,427.66
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)			428.46	3,856.12
			e) Add 1% labour cess on a+b+c+d.			38.56	3,894.68
			Rate per cum (a+b+c+d+e)				Say Rs. 3,895.00
			Labour Rate			798.00	
			Labour in CM 1:6			214.20	
			Scaffolding @ 5%			50.61	1,062.81

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Add 12.5% (Overheads @
2.5 % + 10% Contractor
profit)

132.85

1,195.66

Add 1% labour cess

11.96

Rate per cum

1,207.62

Say Rs. 1,208.00

52 12.8 800

**Plain / reinforced cement concrete in
sub-structure as per drawings and
technical specification clauses 802,
804, 805, 806, 807, 1202 and 1204**

**P.C.C. grade M 15 (1) upto 5 metre
height**

(i) Nominal

Unit = cum

a) Material

Cement	t	0.275	7,688.00	2,114.20
Coarse sand	cum	0.48	1,101.00	528.48
40 mm aggregate	cum	0.48	1,069.00	513.12
20 mm aggregate	cum	0.24	1,276.00	306.24
10 mm aggregate	cum	0.08	1,281.00	38.40

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.10	315.00	31.50
Mazdoor (Unskilled)	day	1.63	210.00	342.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	350.00	140.00
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d) Farmwork @ 10% on (a+b+c)

408.77

4,496.51

e) Add 12.5% (Overheads @
2.5 % + 10% Contractor
profit) on (a+b+c+d)

562.06

5,058.58

f) Add 1% labour cess on
a+b+c.

50.59

Rate per cum = a+b+c+d+e+f

5,109.16

Say Rs. 5,109.00

Labour 447.30

Farm Work @10% 44.73

492.03

Add 12.5% (Overheads @
2.5 % + 10% Contractor
profit) on (a+b+c+d)

61.50

553.53

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Add 1% labour cess on
a+b+c.

5.54

559.07

Say Rs. 559.00

53	12.9	1000	Supplying, fitting and placing HYSD bar reinforcement (Fe 415) in substructure complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202 Unit = t				
			a) Material				
			HYSD bars including 5 per cent overlaps and wastage	t	1.05	56,871.00	59,714.55
			Binding wire	kg	6.00	83.00	498.00
			b) Labour for cutting, bending, shifting to site, tying, and placing in position				
			Mate	day	0.34	210.00	71.40
			Blacksmith	day	2.00	315.00	630.00
			Mazdoor (Unskilled)	day	6.50	210.00	1,365.00
							62,278.95
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				7,784.87
							70,063.82
			e) Add 1% labour cess on a+b+c+d.				700.64
			Rate per t = a+b+c+d				70,764.46
							Say Rs. 70,764.00
			Labour Rate				2,066.40
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				258.30
							2,324.70
			e) Add 1% labour cess				23.25
			Rate per t				2,347.95
							Say Rs. 2,348.00

54	12.13	600	Providing weapholes in brick masonry / stone masonry /plain reinforced concrete abutment, wing wall, return wall with 100 mm dia PVC pipe extending through the full width of the structures with slop of 1(v):20(H) towards drawing face complete as per drawing and technical specification clauses 614, 709, 1204.3.7				
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Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Unit = Nos.

Taking output = 30 Nos.

a) Material

PVC pipe 100 mm dia unloading m 31.50 260.00 8,190.00
wostofer@ 5 percent

Cement mortar 1:3 (for rate refer to cum 0.05 5,291.13 264.56
cement 11.5)

b) Labour

Mate day 0.03 210.00 6.30

Mason (1st Class) day 0.50 315.00 157.50

Mazdoor (Unskilled) day 0.25 210.00 52.50

8,670.86

c) Add 12.5% (Overheads @
2.5 % + 10% Contractor
profit) on (a+b)

1,083.86

9,754.71

d) Add 1% labour cess on
a+b+c.

97.55

Cost for 30 Nos.

9,852.26

Rate per Nos.

328.41

Say Rs. 328.00

Labour Rate 216.30

Labour CM 1:3 10.71

227.01

Add 12.5% (Overheads @
2.5 % + 10% Contractor
profit)

28.38

255.39

Add 1% labour cess.

2.55

Cost for 30 Nos.

257.94

Rate per Nos.

8.60

Say Rs. 9.00

55 12.14 1200

**Backfilling behind abutment, wing wall
and return wall complete as per
drawings & technical specification
Clause 1204.3.8**

Unit = cum

Taking output = 10 cum

I) Granular material

a) Material

Granular material cum 12.00 376.00 4,512.00

b) Labour

Mate day 0.28 210.00 58.80

Mazdoor (Unskilled) day 10.00 210.00 2,100.00

Bhisti day 0.40 210.00 84.00

6,754.80

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				844.35
							7,599.15
			d) Add 1% labour cess on a+b+c.				75.99
			Cost for 10 cum of granular backfill = a+b+c+d				7,675.14
			Rate per cum = (a+b+c+d)/10				767.51
			Labour Rate			Say Rs. 768.00	2,242.80
							3,010.80
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				376.35
							3,387.15
			Add 1% labour cess.				33.87
			Cost for 10 cum of granular backfill				3,421.02
			Rate per cum				342.10
						Say Rs. 342.00	
56	12.15	1200	Providing and laying filter media with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8				
			Unit = cum Taking output = 10 cum				
			a) Material				
			Filter media as per specification	cum	12.00	766.00	9,192.00
			b) Labour				
			Mate	day	0.40	210.00	84.00
			Mazdoor (Unskilled)	day	9.00	210.00	1,890.00
			Mazdoor (Skilled)	day	1.00	210.00	210.00
			Bhisti	day	0.50	210.00	105.00
							11,481.00
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				1,435.13
							12,916.13

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			d) Add 1% labour cess on a+b+c.				129.16
			Cost for 10 cum of filter media = a+b+c+d				13,045.29
			Rate per cum = (a+b+c+d)/10				1,304.53
			Say Rs.			Say Rs. 1,305.00	
			Labour Rate				2,289.00
							3,594.00
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				449.25
							4,043.25
			d) Add 1% labour cess.				40.43
			Cost for 10 cum of sand back fill				4,083.68
			Rate per cum				408.37
						Say Rs. 408.00	
57	12.17	600	Providing PCC M-20 architectural coping on the top of wing wall, return wall etc. complete as per drawing and technical specification Clauses 615, 710 and 1204.3.11 Unit = Running m Taking output = 1 m Assume wall thickness = 345 mm Projection of the coping will be 25 mm wide on both side of the wall = 345 + 50 = 395 mm Quantity = 1 x 0.395 x 0.150 = 0.059 PCC M-20 Grade (1:2:4) Nominal Mix As per item No. 12.8 (III)(i)	cum	0.059	5,548.00	327.33
			Add 10 per cent extra of cost of (a) being architectural coping				32.73
			Cost of 1 m = a				360.07
						Say Rs. 360.00	
			Labour Rate	cum	0.059	529.00	31.21
			Add 10 per cent extra				2.16
			Cost of 1 m				33.37
						Say Rs. 33.00	

Chapter – 13

SUPERSTRUCTURE

Preamble:

- 1 The rate for wearing coat has been analysed as under in accordance with the provisions of MORD Specifications:
 - a. Bituminous type
 - b. Cement concrete
- 2 The rate analysis has been done for the following types of railings & parapet:
 - i. R.C.C. railing
 - ii. M.S. railing
 - iii. Pipe railing (suitable for submersible bridges)
 - iv. Brick masonry parapet
 - v. Stone masonry parapet
 - vi. P.C.C. parapet
- 3 As per the MORD Specifications, the type of superstructure envisaged for minor bridges and culverts for rural roads are R.C.C. slabs and box culverts not exceeding 15 m span, rates for which have been analysed. Stone/Brick masonry arches can be adopted where hard strata is available at shallow depth. R.C.C. arches can also be adopted as per IRC:SP:20. Hence rates for these types of arches for span length upto 15 m have been analysed.
- 4 For composite type of superstructure, comprising of steel beams/built-up sections & R.C.C. deck slab, analysis has been done for steel section separately.
- 5 For slab culverts and minor bridges of spans not more than 10 m, buried joint/filler joint may be adequate. For relatively longer spans and for highly seismic intensity areas, elastomeric slab seal/compression seal joint may be provided as per the MORD Specifications. Rates have been analysed accordingly.
- 6 In remote areas, for slab culverts and box culverts upto 2 m span, concrete used in superstructure can be hand mixed with 10 per cent extra cement at contractor's cost in accordance with Clause 806 of MORD Specifications. Hand mixing shall not be otherwise permitted.
- 7 Slab seal/compression seal expansion joints are specialised items commercially produced by a number of firms. The rates for such items must be ascertained from firms pre-qualified by MORTH. Overheads for the above specialized manufactured items have been considered as 30 per cent instead of the usual 20 per cent for other items of bridge works.
- 8 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 13 SUPERSTRUCTURE

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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58 13.1 800 **Providing and laying reinforced cement concrete in superstructure as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5**

I. R.C.C grade M 20

(i) **For nominal mix 1:2:4 upto 5 m height**

Unit = cum

a) Material

Cement	t	0.35	7,688.00	2,690.80
Coarse sand	cum	0.45	1,101.00	495.45
20 mm aggregate	cum	0.54	1,276.00	689.04
10 mm aggregate	cum	0.36	1,281.00	461.16

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.12	315.00	37.80
Mazdoor (Unskilled)	day	1.73	210.00	363.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Concrete mixer 0.4/ 0.28 cum capacity	hour	0.40	350.00	140.00
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d) Add for formwork and staging

Height upto 5 m @ 20% of (a+b+c)				990.21
				<hr/> 5,941.26

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

742.66
<hr/> 6,683.92

d) Add 1% labour cess on a+b+c.

66.84
<hr/> 6,750.76

Rate per cum = a+b+c+d+e+f

Say Rs. 6,751.00

Labour Rate	474.60
Farm Work @ 20%	<hr/> 94.92
	569.52

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)	<hr/> 71.19
	640.71

Add 1% labour cess .	<hr/> 6.41
Rate per cum	647.12

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Say Rs. 647.00

(i) II For nominal mix 1:2:4

Height from 5m to 10m

Unit = cum

a) Material

Cement	t	0.35	7,688.00	2,690.80
Coarse sand	cum	0.45	1,101.00	495.45
20 mm aggregate	cum	0.54	1,276.00	689.04
10 mm aggregate	cum	0.36	1,281.00	461.16

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.12	315.00	37.80
Mazdoor (Unskilled)	day	1.73	210.00	363.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	350.00	140.00
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d) Add for formwork and staging

Height from 5 m to 10 m @ 25% of (a+b+c)				1,237.76
				<u>6,188.81</u>

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)

773.60
<u>6,962.41</u>

d) Add 1% labour cess on a+b+c.

69.62

Rate per cum = a+b+c+d+e+f

<u>7,032.04</u>

Say Rs. 7,032.00

Labour Rate	474.60
Farm Work @ 25%	118.65
	593.25

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

74.16

<u>667.41</u>

Add 1% labour cess .

6.67

Rate per cum

<u>674.08</u>

Say Rs. 674.00

(i) II For nominal mix 1:2:4

Height above 10m

Unit = cum

a) Material

Cement	t	0.35	7,688.00	2,690.80
Coarse sand	cum	0.45	1,101.00	495.45
20 mm aggregate	cum	0.54	1,276.00	689.04
10 mm aggregate	cum	0.36	1,281.00	461.16

b) Labour

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Mate	day	0.08	210.00	16.80
			Mason (1st Class)	day	0.12	315.00	37.80
			Mazdoor (Unskilled)	day	1.73	210.00	363.30
			Bhisti	day	0.27	210.00	56.70
			c) Machinery				
			Concrete mixer 0.4/ 0.28 cum capacity	hour	0.40	350.00	140.00
			d) Add for formwork and staging				
			Height above 10 m @ 30% of (a+b+c)				1,485.32
							<u>6,436.37</u>
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				804.55
							<u>7,240.91</u>
			d) Add 1% labour cess on a+b+c.				72.41
							<u>7,313.32</u>
			Rate per cum = a+b+c+d+e+f				
			Labour Rate				474.60
			Farm Work @ 30%				142.38
							<u>616.98</u>
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				77.12
							<u>694.10</u>
			Add 1% labour cess .				6.94
							<u>701.04</u>
			Rate per cum				
							<u>701.00</u>
			Say Rs. 7,313.00				
			Say Rs. 701.00				
			(iii) For design mix RCC M 20 upto 5 m height				
			a) Material				
			Cement	t	0.33	7,688.00	2,537.04
			Coarse sand	cum	0.45	1,101.00	495.45
			20 mm aggregate	cum	0.54	1,276.00	689.04
			10 mm aggregate	cum	0.36	1,281.00	461.16
			b) Labour				
			Mate	day	0.08	210.00	16.80
			Mason (1st Class)	day	0.12	315.00	37.80
			Mazdoor (Unskilled)	day	1.73	210.00	363.30
			Bhisti	day	0.27	210.00	56.70
			c) Machinery				
			Concrete mixer 0.4/0.28 cum capacity	hour	0.40	350.00	140.00
			d) For formwork and staging add the following percentage of (a+b+c):				

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Height upto 5 m @ 20 per cent				959.46
							<u>5,756.75</u>
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)				719.59
							<u>6,476.34</u>
			d) Add 1% labour cess on a+b+c.				64.76
			Rate per cum = a+b+c+d+e+f				<u>6,541.10</u>
						Say Rs. 6,541.00	
			Labour Rate				474.60
			Farm Work @ 20%				94.92
							<u>569.52</u>
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				71.19
							<u>640.71</u>
			Add 1% labour cess .				6.41
			Rate per cum				<u>647.12</u>
						Say Rs. 647.00	
			(iii) For design mix RCC M 20 (1:2:4)				
			Height from 5m to 10m				
			a) Material				
			Cement	t	0.33	7,688.00	2,537.04
			Coarse sand	cum	0.45	1,101.00	495.45
			20 mm aggregate	cum	0.54	1,276.00	689.04
			10 mm aggregate	cum	0.36	1,281.00	461.16
			b) Labour				
			Mate	day	0.08	210.00	16.80
			Mason (1st Class)	day	0.12	315.00	37.80
			Mazdoor (Unskilled)	day	1.73	210.00	363.30
			Bhisti	day	0.27	210.00	56.70
			c) Machinery				
			Concrete mixer 0.4/0.28 cum capacity	hour	0.40	350.00	140.00
			d) For formwork and staging add the following percentage of (a+b+c):				
			Height from 5 to 10 m @ 25 per cent				1,199.32
							<u>5,996.61</u>
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)				749.58
							<u>6,746.19</u>

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			d) Add 1% labour cess on a+b+c.				67.46
			Rate per cum = a+b+c+d+e+f				6,813.65
						Say Rs. 6,814.00	
			Labour Rate				474.60
			Farm Work @ 25%				118.65
							593.25
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				74.16
							667.41
			Add 1% labour cess .				6.67
			Rate per cum				674.08
						Say Rs. 674.00	
			(iii) For design mix RCC M 20				
			III (1:2:4)				
			Height above 10m				
			a) Material				
			Cement	t	0.33	7,688.00	2,537.04
			Coarse sand	cum	0.45	1,101.00	495.45
			20 mm aggregate	cum	0.54	1,276.00	689.04
			10 mm aggregate	cum	0.36	1,281.00	461.16
			b) Labour				
			Mate	day	0.08	210.00	16.80
			Mason (1st Class)	day	0.12	315.00	37.80
			Mazdoor (Unskilled)	day	1.73	210.00	363.30
			Bhisti	day	0.27	210.00	56.70
			c) Machinery				
			Concrete mixer 0.4/0.28 cum capacity	hour	0.40	350.00	140.00
			d) For formwork and staging add the following percentage of (a+b+c):				
			Height above 10 m @ 30 per cent				1,439.19
							6,236.48
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)				779.56
							7,016.04
			d) Add 1% labour cess on a+b+c.				70.16
			Rate per cum = a+b+c+d+e+f				7,086.20
						Say Rs. 7,086.00	
			Labour Rate				474.60
			Farm Work @ 30%				142.38

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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616.98

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

77.12

694.10

Add 1% labour cess .

6.94

Rate per cum

701.04

Say Rs. 701.00

II. (i) R.C.C M 25 upto 5 m height

Unit =cum

a) Material

Cement t 0.40 7,688.00 3,075.20

Coarse sand cum 0.45 1,101.00 495.45

20 mm aggregate cum 0.54 1,276.00 689.04

10 mm aggregate cum 0.36 1,281.00 461.16

b) Labour

Mate day 0.08 210.00 16.80

Mason (1st Class) day 0.12 315.00 37.80

Mazdoor (Unskilled) day 1.73 210.00 363.30

Bhisti day 0.27 210.00 56.70

e) Machinery

Concrete mixer 0.4/0.28 cum hour 0.40 350.00 140.00 capacity

d) For formwork and staging refer to sub-item above @ 20%

1,067.09

6,402.54

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)

800.32

7,202.86

d) Add 1% labour cess on a+b+c.

72.03

Rate per cum = a+b+c+d+e+f

7,274.89

Say Rs. 7,275.00

Labour Rate

474.60

Farm Work @ 20%

94.92

569.52

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)

71.19

640.71

Add 1% labour cess .

6.41

Rate per cum

647.12

Say Rs. 647.00

II. (ii) For Height 5m to 10 m

Unit =cum

a) Material

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Cement	t	0.40	7,688.00	3,075.20
			Coarse sand	cum	0.45	1,101.00	495.45
			20 mm aggregate	cum	0.54	1,276.00	689.04
			10 mm aggregate	cum	0.36	1,281.00	461.16
			b) Labour				
			Mate	day	0.08	210.00	16.80
			Mason (1st Class)	day	0.12	315.00	37.80
			Mazdoor (Unskilled)	day	1.73	210.00	363.30
			Bhisti	day	0.27	210.00	56.70
			e) Machinery				
			Concrete mixer 0.4/0.28 cum hour capacity		0.40	350.00	140.00
			d) For height 5 m to 10 m @25% on (a+b)				1,333.86
							<hr/> 6,669.31
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)				<hr/> 833.66
							<hr/> 7,502.98
			d) Add 1% labour cess on a+b+c.				<hr/> 75.03
			Rate per cum = a+b+c+d+e+f				<hr/> 7,578.01
						Say Rs. 7,578.00	
			Labour Rate				474.60
			Farm Work @ 25%				<hr/> 118.65
							593.25
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				<hr/> 74.16
							<hr/> 667.41
			Add 1% labour cess .				<hr/> 6.67
			Rate per cum				<hr/> 674.08
						Say Rs. 674.00	
			II. (ii For Height above 10 m				
			Unit =cum				
			a) Material				
			Cement	t	0.40	7,688.00	3,075.20
			Coarse sand	cum	0.45	1,101.00	495.45
			20 mm aggregate	cum	0.54	1,276.00	689.04
			10 mm aggregate	cum	0.36	1,281.00	461.16
			b) Labour				
			Mate	day	0.08	210.00	16.80
			Mason (1st Class)	day	0.12	315.00	37.80
			Mazdoor (Unskilled)	day	1.73	210.00	363.30
			Bhisti	day	0.27	210.00	56.70
			e) Machinery				
			Concrete mixer 0.4/0.28 cum hour	hour	0.40	350.00	140.00
			d) For height above 10 m @30%				<hr/> 1,600.64

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
							6,936.09
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)			867.01	867.01
							7,803.10
			d) Add 1% labour cess on a+b+c.			78.03	78.03
			Rate per cum = a+b+c+d+e+f			7,881.13	7,881.13
			Say Rs.			7,881.13	
			Labour Rate			474.60	474.60
			Farm Work @ 30%			142.38	142.38
							616.98
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)			77.12	77.12
							694.10
			Add 1% labour cess .			6.94	6.94
			Rate per cum			701.04	701.04
			Say Rs.				Say Rs. 701.00

Note: This analysis will hold good for concrete of nominal mix 1:1½:3 also

III. (i R.C.C. Grade M 30 upto 5 m height

Unit =cum

a) Material

Cement	t	0.43	7,688.00	3,305.84
Sand	cum	0.45	1,101.00	495.45
20 mm aggregate	cum	0.54	1,276.00	689.04
10 mm aggregate	cum	0.36	1,281.00	461.16

b) Labour

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.12	315.00	37.80
Mazdoor (Unskilled)	day	1.73	210.00	363.30
Bhisti	day	0.27	210.00	56.70

c) Machinery

Concrete mixer 0.4/0.28 cum hour capacity	0.40	350.00	140.00
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d) For formwork and staging refer to sub-item above @ 20%

1,113.22

6,679.31

c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)

834.91

7,514.22

d) Add 1% labour cess on a+b+c.

75.14

Rate per cum = a+b+c+d+e+f

7,589.36

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Say Rs. 7,589.00

Labour Rate	474.60
Farm Work @ 20%	94.92
	<u>569.52</u>

Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)	71.19
	<u>640.71</u>

Add 1% labour cess .	6.41
Rate per cum	<u>647.12</u>

Say Rs. 647.00

59 13.5 800 **Providing and laying cement concrete wearing course M 30 grade including reinforcement complete as per drawing and technical specifications Clauses 800 and 1206.3**

Unit = cum

a) **Material**

Cement	t	0.43	7,688.00	3,305.84
Sand	cum	0.45	1,101.00	495.45
20 mm aggregate	cum	0.54	1,276.00	689.04
10 mm aggregate	cum	0.36	1,281.00	461.16
HYSD bar reinforcement (Rate as per item 13.2)	t	0.075	56,871.00	4,265.33
Binding Wire	kg	0.01	83.00	0.83

b) **Labour**

Mate	day	0.08	210.00	16.80
Mason (1st Class)	day	0.12	315.00	37.80
Mazdoor	day	1.73	210.00	363.30
Bhisti	day	0.27	210.00	56.70
Mazdoor (Unskilled) for cleaning deck slab concrete surface	day	0.15	210.00	31.50

c) **Machinery**

Concrete mixer 0.4/0.28 cum capacity	hour	0.40	350.00	140.00
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d) **Formwork @ 3% of cost of concrete**

295.91

10,159.66

e) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)	1,269.96
	<u>11,429.61</u>

f) Add 1% labour cess on a+b+c.	114.30
Rate per cum = a+b+c+d+e+f	<u>11,543.91</u>

Say Rs. 11,544.00

Labour Rate	506.10
Formwork @ 3%	<u>15.18</u>

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
							521.28
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c+d)			65.16	
							586.44
			Add 1% labour cess on a+b+c.			5.86	
			Rate per cum				592.31
							Say Rs. 592.00
60	13.6	800	Construction of R.C.C. railing of M 25 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and 1208.3				
			Unit = Running m Taking output = 4x12 m Span = 48 m				
			a) M 25 grade R.C.C. No. of vertical posts = (6+1) 4 = 28 nos Cross-sectional area of vertical post = 0.25x0.275 = 0.069 sqm Concrete in vertical posts = 0.069 x28x1.00 = 1.932 cum Hand rail in 3 tiers = 3x48 = 144 m Cross-sectional area = 0.17x0.175 = 0.03 sqm Concrete in hand rails = 0.03 x 144 = 4.32 cum Total concrete = 1.932+4.32 = cum 6.252 cum		6.25	5,976.00	20,049.38
			b) HYSD bar reinforcement (Rate as per item (55) (13.2)	t	1.36	70,764.00	96,239.04
							1,16,288.42
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)			14,536.05	
						#####	
			d) Add 1% labour cess on a+b+c.			1,308.24	
			Cost for 48 m = (a+b+c+d)				1,32,132.72

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Rate per m = (a+b+c+d)/48 2,752.76

Say Rs. 2,753.00

Labour Rate for M-25 grads 3,326.06

HYSD bar reinforcement 3,193.28

Formwork @ 12% 782.32

Add 12.5% (Overheads @
2.5 % + 10% Contractor
profit) 97.79

7,399.46

Add 1% labour cess 73.99

Cost for 48 m 7,473.45

Rate per m 155.70

Say Rs. 156.00

Sub Analysis for Rate of Concrete

Unit=Cum

a) Material

Cement t 0.40 7,688.00 3,075.20

Coarse sand cum 0.45 1,101.00 495.45

20 mm aggregate cum 0.54 1,276.00 689.04

10 mm aggregate cum 0.36 1,281.00 461.16

b) Labour

Mate day 0.08 210.00 16.80

Mason (1st Class) day 0.12 315.00 37.80

Mazdoor (Unskilled) day 1.73 210.00 363.30

Bhisti day 0.27 210.00 56.70

c) Machinery

Concrete mixer 0.4/0.28 cum hour 0.40 350.00 140.00
capacity

d) Formwork @ 12%

640.25

Total rate per cum (a+b+c+d) 5,975.70

Say Rs. 5,976.00

Labour 474.60

Formwork @ 12% 56.95

Labour Rate per cum 531.55

Say Rs. 532.00

61 13.10 1200 **Drainage spouts complete as per drawing and technical specifications Clause 1209**

Unit = 1 No

a) Material

i) Corrosion resistant structural steel grating including 5 per cent wastage kg 4.00 151.00 604.00

ii) G I pipe 100 mm dia m 1.00 837.00 837.00

b) Labour

For fabrication

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
			Mate	day	0.02	210.00	4.20
			Blacksmith, Welder etc. (Skilled)	day	0.02	315.00	6.30
			Mazdoor (Unskilled)	day	0.20	210.00	42.00
			For fixing in position				
			Mate	day	0.01	210.00	2.10
			Mason (1st Class)	day	0.01	315.00	3.15
			Mazdoor (Unskilled)	day	0.20	210.00	42.00
			Add @ 5 per cent of cost of material and labour (a+b) for electrodes, gas cutting, sealant, anti-corrosive bituminous paint, mild steel grating etc.				42.76
							<hr/> 1,583.51
			c) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)				<hr/> 197.94
							<hr/> 1,781.45
			d) Add 1% labour cess on a+b+c.				<hr/> 17.81
			Rate per m = a+b+c+d				<hr/> 1,799.26
						Say Rs. 1,799.00	
			Labour Rate				99.75
			Add @ 5 per cent of cost of material and labour for electrodes, gas cutting, sealant, anti-corrosive bituminous paint, mild steel grating etc.				4.99
							<hr/> 104.74
			Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)				<hr/> 13.09
							<hr/> 117.83
			Add 1% labour cess .				<hr/> 1.18
			Rate per m				<hr/> 119.01
						Say Rs. 119.00	

Chapter – 14

PROTECTION WORKS

Preamble:

- 1 Three types of aprons as under have been catered for:
 - a. Boulder apron laid dry
 - b. Boulder apron laid in wire crates
 - c. Apron laid in cement concrete blocks of M 15 grade
- 2 Pitching proposed is of the following types:
 - a. Brick pitching
 - b. Boulder pitching
 - c. CC Block pitching
- 3 A toe wall for toe protection of pitching can be either in random rubble masonry or in nominal mix cement concrete M 10, or in brick masonry. Depending upon the design, the rates may be adopted.
- 4 Flooring has been proposed in dry rubble stone, rubble stone laid in cement mortar 1:3, cement concrete blocks M 15 and brick on edge laid in cement mortar (CM) 1:3.
- 5 Curtain walls proposed are of the following types:
 - a. Brick masonry in CM 1:4
 - b. Coursed rubble stone masonry (1st sort) is CM 1:3
 - c. Cement concrete M-10 grade
- 6 For protection works, Overheads shall be 15 per cent instead of 20 per cent for other items of bridge works.
- 7 The rate analysis also include protection works using timber/bamboo as per details provided by Assam PWD and may be used for guidance.
- 8 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 14 PROTECTION WORKS

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
62	14.2	1300	Providing and laying of boulder apron laid in wire crates with 4 mm dia GI wire conforming to IS:280 and IS:4826 in 100 mm x 100 mm mesh (woven diagonally) including 10 per cent extra for laps and joints laid with stone boulders weighing not less than 25 kg each as per drawing and technical specifications Clause 1301				
			Unit = cum Taking output = 3 m x 1.5 m x 1.25 m = 5.63 cum				
			a) Material				
			Stone boulder (25 kg minimum)	cum	5.63	766.00	4,312.58
			Stone spalls	cum	1.13	766.00	865.58
			GI wires 4 mm dia @ 32 kg/10 sqm	kg	64.00	82.00	5,248.00
			b) Labour				
			Mate	day	0.18	210.00	37.80
			Mazdoor (Skilled)	day	1.50	210.00	315.00
			Mazdoor (Unskilled)	day	3.00	210.00	630.00
			c) Add for labour for weaving the wire crates @ 2 per cent of cost of GI wire				104.96
							<hr/> 11,513.92
			d) Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b+c)				1,439.24
							<hr/> 12,953.16
			e) Add 1% labour cess on a+b+c+d.				129.53
			Cost for 5.63 cum = a+b+c+d+e				<hr/> 13,082.69
			Rate per cum = (a+b+c+d+e)/5.63				2,323.75
						Say Rs. 2,324.00	
			Labour Rate				982.80
			Add for labour for weaving the wire crates @ 2 per cent of cost of GI wire				19.66
							<hr/> 1,002.46
			d) Add 12.5% (Overheads @ 2.5 % +				125.31
							<hr/> 1,127.76
			e) Add 1% labour cess on a+b+c+d.				11.28
			Cost for 5.63 cum				<hr/> 1,139.04
			Rate per cum				202.32
						Say Rs. 202.00	

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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63 14.8 1303 **Providing and laying of dry rubble flooring complete as per drawings and technical specifications Clause 1303.3**

Unit = cum

a)	Material					
	Stone for rubble flooring 150 mm thick	cum	1.00	1,303.00		1,303.00
	Stone spalls	cum	0.20	300.00		60.00
b)	Labour					
	Mate	day	0.10	210.00		21.00
	Mason 1st Class	day	0.50	315.00		157.50
	Mazdoor (Unskilled)	day	1.50	210.00		315.00
	Add 1 per cent of (b) for trimming and preparation of base					4.94
						<hr/> 1,861.44
c)	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit) on (a+b)					<hr/> 232.68
						2,094.11
d)	Add 1% labour cess on a+b+c.					<hr/> 20.94
	Rate per cum = a+b+c+d					2,115.06
						Say Rs. 2,115.00
	Labour Rate					493.50
	Add 12.5% (Overheads @ 2.5 % + 10% Contractor profit)					<hr/> 61.69
						555.19
	Add 1% labour cess					<hr/> 5.55
	Rate per cum					560.74
						Say Rs. 561.00

Chapter – 15

MAINTENANCE OF ROADS

Preamble:

- 1 In the case of rain cuts, it has been assumed that some material cut by rain, approximately 25 per cent will be available at site which can be retrieved and re-used and the balance 75 per cent is required to be provided as fresh material.
- 2 For making up earthen shoulders, it has been assumed that on an average 150 mm filling will be required. Similarly, for stripping of excess soil from shoulder, an average depth of 75 mm has been assumed.
- 3 Pothole repairs and patchwork are provided to be done by using Mixall 6/10 M.T.
- 4 In case of maintenance of Gravel and W.B.M. surfaces, it has been assumed that 25 per cent material will be available at site, which can be retrieved and re-used and the balance 75 per cent is required to be provided as fresh material.
- 5 The items of periodical renewal by premix carpet and surface coating have also been included in the rate analysis for guidance of field Engineers. The detailed analysis of various items of bituminous works is given in Chapter 5 and rates can be taken from there as appropriate. Additional provision of patch repair and profile correction varying from 10 per cent to 30 per cent of the material of premix carpet/surface dressing may be made in the estimate of periodical renewal.
- 6 The extra Cost of Carriage, including loading, unloading is required to be added based on Tonne - Kilometerage as per Chapter -I for the purpose of justification.

Chapter – 15

MAINTENANCE OF ROADS

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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Chapter – 16

BIO ENGINEERING ELEMENTS

Preamble:

- 1 The rate analysis also include protection/ plantations works using Bio Engineering Elements norms may be used as per MORTH specification.
- 2 The detail drawings sketch may be added in the analysis/ schedule of rate.
- 3 The farm yard manure and bamboo tree guard may be provided as per specification.
- 4 The analysis of rates for grassing of lawns and hedges has been included, as the same may be needed for resting places on highways and other roads.
- 5 The rates of materials taken in the alalysis/ schedule of rates are on lowest prevailing market rate has finalized and approved by the committee constituted.
- 6 The extra cost of carriage, including loading, unloading is required to be added based on tonne-kilometerage as per chapter-1 for the purpose of justification.

Chapter – 16

BIO ENGINEERING ELEMENTS

Sr. No.	Sr.No as per HPSR-2009	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
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