



GOVERNMENT OF HIMACHAL PRADESH
PUBLIC WORKS DEPARTMENT



SCHEDULE OF RATES
2016
PMGSY
ROAD WORKS

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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 OF MATERIALS

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|----------|-------------|--------------|
| 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 | Cum | -- | 83.00 |
| | (ii) | Loading of Earth, Sand, Moorum, Manure, Flyash by manual means including a lead upto 30 m | Cum | -- | 42.00 |
| | (iii) | Unloading 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 | Cum | -- | 42.00 |
| | (iv) | Unloading of Earth, Sand, Moorum, Manure, Flyash by manual means including a lead upto 30 m | Cum | -- | 26.00 |
| 2 | | Loading and Unloading of 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 | Cum | -- | 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. | Cum | -- | 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. | Cum | -- | 8.00 |
| 3 | | Loading, Unloading and Stacking of Bricks by Manual Means | | | |
| | (i) | Loading of Bricks by manual means including a lead upto 30 m | 1000 Nos | -- | 141.00 |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|--|---------------------------------|--|----------|-------------|--------------|
| | | (ii) Unloading and Stacking of Bricks by manual means including a lead upto 30 m | 1000 Nos | -- | 141.00 |
| 4 | | Loading and Unloading of Cement by Manual Means | | | |
| | | (i) Loading of Cement by manual means including a lead upto 30 m | Tonne | -- | 104.00 |
| | | (ii) Unloading of Cement by manual means including a lead upto 30 m | Tonne | -- | 104.00 |
| 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 | Tonne | -- | 112.00 |
| | | (ii) Unloading of Structural Steel, Steel Bars by manual means including a lead upto 30 m | Tonne | -- | 112.00 |
| 6 | | Loading and Unloading of Bitumen Drums by Manual Means | | | |
| | | (i) Loading of Bitumen Drums by manual means including a lead upto 30 m | Tonne | -- | 123.00 |
| | | (ii) Unloading of Bitumen Drums by Manual Means including a lead upto 30 m | Tonne | -- | 113.00 |
| Note: The rate is inclusive of the self weight of drum | | | | | |
| 7 | 100 | Loading and Unloading of Timber by Manual Means | | | |
| | | (i) Loading of Timber by manual means including a lead upto 30 m | Tonne | -- | 183.00 |
| | | (ii) Unloading of Timber by manual means including a lead upto 30 m | Tonne | -- | 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 | | 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 | Cum | -- | 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 | Cum | -- | 273.00 |
| 9 | | Loading and Unloading of Hume Pipes | | | |
| | | (i) Loading of RCC Hume pipes by mechanical means including a lead upto 30 m | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|---|--------|-------------|--------------|
| | | A. 900/1000/1200mm dia RCC Hume pipe | P/Pipe | -- | 76.00 |
| | | B. 750mm dia RCC Hume pipe | P/Pipe | -- | 46.00 |
| | | C. 600/500/300mm dia Hume pipe | P/Pipe | -- | 33.00 |
| | | (ii) Unloading of RCC Hume Pipe by manual means including a lead upto 30m | | | |
| | | A. 900/1000/1200 mm dia RCC Hume pipes | P/Pipe | -- | 329.00 |
| | | B. 750mm dia Hume pipe | P/Pipe | -- | 274.00 |
| | | C. 600/500/300mm dia Hume pipe | P/Pipe | -- | 206.00 |
| | | (iii) Unloading of RCC Hume Pipe by manual means including a lead upto 30m | | | |
| | | A. 900/1000/1200 mm dia Hume pipe | P/Pipe | -- | 52.00 |
| | | B. 750 mm dia Hume pipe | P/Pipe | -- | 31.00 |
| | | C. 600/500/300 mm dia Hume pipe | P/Pipe | -- | 22.00 |
| 10 | | Haulage excluding Loading & Unloading | | | |
| | | Haulage of materials by tipper excluding cost of loading, unloading and stacking. | | | |
| | | (i) Surface road. | T/Km. | -- | 4.00 |
| | | (ii) Unsurfaced Gravel road | T/Km. | -- | 5.00 |
| | | (iii) Katcha track and track in River Bed/Nallah bed & Choe bed | T/Km. | -- | 10.00 |
| 11 | | Haulage excluding Loading & Unloading | | | |
| | | Haulage of materials by truck excluding cost of loading, unloading and stacking. | | | |
| | | I) Hume pipe 900/1000/1200 mm dia | | | |
| | | Case-I | | | |
| | | (i) Surface road. | P/Pipe | -- | 45.00 |
| | | Case-II | | | |
| | | (ii) Unsurfaced Gravel road | P/Pipe | -- | 54.00 |
| | | Case-III | | | |
| | | (iii) Katcha track and track in River Bed/Nallah bed & Choe bed | P/Pipe | -- | 108.00 |
| | | II) Hume pipe 750 mm dia | | | |
| | | Case-I | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|---|--------|-------------|--------------|
| | | (i) Surface road. | P/Pipe | -- | 27.00 |
| | | Case-II | | | |
| | | (ii) Unsurfaced Gravel road | P/Pipe | -- | 36.00 |
| | | Case-III | | | |
| | | (iii) Katcha track and track in River Bed/Nallah bed & Choe bed | P/Pipe | -- | 65.00 |
| | | III) Hume pipe 600/500/300 mm dia | | | |
| | | Case-I | | | |
| | | (i) Surface road. | P/Pipe | -- | 19.00 |
| | | Case-II | | | |
| | | (ii) Unsurfaced Gravel road | P/Pipe | -- | 25.00 |
| | | Case-III | | | |
| | | (iii) Katcha track and track in River Bed/Nallah bed & Choe bed | P/Pipe | -- | 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

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|-------------|------|-------------|--------------|
|---------|---------------------------------|-------------|------|-------------|--------------|

SITE CLEARANCE

| | | | | | |
|----|-----|--|---------|----|-----------|
| 12 | 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. By Mechanical Means | | | |
| | | (A) In area of non-thorny jungle | Hectare | -- | 73,066.00 |
| | | (B) In area of thorny jungle | Hectare | -- | 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

EARTTHWORK, EROSION CONTROL AND DRAINAGE

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| 13 | 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 | Cum | - | 273.00 |
| 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. | Cum | -- | 283.00 |
| 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. | Cum | | 77.00 |
| | 301.4 | Compacting Original Ground | | | |
| 16 | | (i) Compacting original ground supporting embankment | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|---|-------|-------------|--------------|
| | | Loosening, Levelling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Tables 300.1 and 300.2 for embankment construction as per Technical Specification Clause 301.4 | Cum | | 28.00 |
| 17 | 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. | | | |
| | | (A) Manual Means | Metre | 50.00 | -- |
| | | (B) Mechanical Means | Metre | -- | 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. | | | |
| | | (A) Manual Means | Metre | 74.45 | -- |
| | | (B) Mechanical Means | Metre | -- | 33.00 |
| | | (iii) Surface Drains in Hard Rock | | | |
| | | (A) Manual Means | Metre | 37.00 | -- |
| | | (B) Mechanical Means | Metre | -- | 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 - Kilometrage as per Chapter -I for the purpose of justification.

CHAPTER-4

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

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|---|------|-------------|--------------|
| 18 | 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 | Cum | -- | 1,480.00 |
| | | (ii) For Grading II Material | Cum | -- | 1,461.00 |
| | | (iii) For Grading III Material | Cum | -- | 1,447.00 |
| 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 | Cum | -- | 1,617.00 |
| | ii) | Gravel/Soil-Aggregate Base (Table 400.2) Grading B | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| | | 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 | Cum | -- | 1,617.00 |
| | | 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 | Cum | -- | 1,603.00 |
| 19 | 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 | Cum | -- | 1,450.00 |
| | | ii) Gravel/Soil-Aggregate Base (Table 400.2) Grading B | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| | | 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 | Cum | -- | 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 | Cum | -- | 1,489.00 |
| 20 | 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 405. | | | |
| | | (A) By Manual Means | Cum | -- | 2,033.00 |
| | | (B) By Mechanical Means | Cum | -- | 1,923.00 |
| | | 2) WBM Grading 2 | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| | | 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 | Cum | -- | 2,086.00 |
| | | (B) By Mechanical Means | Cum | -- | 2,002.00 |
| 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 | Cum | -- | 2,161.00 |
| | | (B) By Mechanical Means | Cum | -- | 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

BASE AND SURFACE COURSES (BITUMINOUS)

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| 21 | 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 | | | |
| | | (B) By Mechanical Means | Sqm. | -- | 53.00 |
| 22 | 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. | Sqm. | -- | 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. | Sqm. | -- | 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. | Sqm. | -- | 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. | Sqm. | -- | 21.00 |
| 23 | 5.9 | 508 20mm thick Open-Graded Premix Carpet using Bituminous (penetration grade/modified bitumen) Binder | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|---|------|-------------|--------------|
| | | 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. | | | |
| | | By Mechanical Means | | | |
| | | (I) Bitumen (S-90) | Sqm | -- | 160.00 |
| | | (II) Bitumen Emulsion (MS) | Sqm | -- | 197.00 |
| 24 | 510 | Seal Coat | | | |
| | | Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A, Type B and Type C as per Technical Specification Clause 510 | | | |
| | | B. By Mechanical Means | | | |
| | 510 | II : Type B | | | |
| | | (I) Bitumen (S-90) | Sqm | -- | 59.00 |
| | | (I) Bitumen (SS-2) | Sqm | -- | 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. | Reference to M O R D Specification | Description | Unit | Labour Rate | Through Rate |
|------------|--|-------------|------|-------------|--------------|
|------------|--|-------------|------|-------------|--------------|

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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 SUBMERGIBLE BRIDGES

| Sr. No. | Reference to M.O.R.D. Specification | Description | Unit | Labour Rate | Through Rate |
|------------|---|-------------|------|-------------|--------------|
|------------|---|-------------|------|-------------|--------------|

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Chapter – 8

HILL ROADS

Preamble:

- 1 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. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|---|------|-------------|--------------|
| 25 | 1600 | Setting Out | | | |
| | | (1) Construction of reference pillars as per Fig. 1600.1 (b) as per drawing and Technical Specification Clause 1602.1 | Each | 2221.00 | 6,599.00 |
| | | (2) Construction of back pillar as per Fig. 1600.1 (c) as per drawing and Technical Specification Clause 1602.3 | Each | 9055.00 | 25,377.00 |
| | | (3) Construction of Job pillars as per Fig. 1600.1 (d) and Technical Specification Clause 1602.4 | Each | 224.00 | 636.00 |
| 26 | 1600 & 300 | Earth work in Hill Road | | | |
| | | (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 | Cum | 124.00 | -- |
| | | B) Extra for Every Additional Lift of 1.5 m or Part thereof | Cum | 13.00 | -- |
| | | (ii) Excavation in Hilly Areas in Soil by mechanical means | | | |
| | | 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 | Cum | 19.00 | 136.59 |
| | | B) Extra for Every Additional Lift of 1.5 m or Part thereof | Cum | 13.00 | -- |
| | | (iv) 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. | Cum | 37.00 | 217.00 |
| | | (v) Excavation in Hilly Areas in Hard Rock requiring blasting | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|--------------------------------------|---------------------------------|---|-------|-------------|--------------|
| | | 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. | Cum | 53.00 | 334.00 |
| | | B) Extra for Every Additional Lift of 1.5 m or Part thereof | Cum | 26.00 | - |
| RETAINING WALL / BREAST WALLS | | | | | |
| 27 | 1600, 600 & 700 | Retaining Walls / Breast Walls 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 | 199.00 | 199.00 |
| | | (ii) Plain cement concrete M 10 grade Rate as per item No.11.4, I(ii) of Chapter 11 | cum | 529.00 | 4,897.00 |
| | | (iii) Stone masonry in cement mortar 1:5 Rate as per item No. 12.7 (III) (iii) of Chapter 12 | cum | 1,300.00 | 4,209.00 |
| | | (iv) Pointing with cement mortar 1:3 Rate as per item No.12.2 of Chapter 12 | sqm | 363.00 | 536.00 |
| | | (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 | metre | 33.00 | 360.00 |
| | | (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 | 408.00 | 1,305.00 |
| | | (vii) Back filling behind retaining wall/breast wall Rate as per item No. 12.14 of Chapter 12 | cum | 342.00 | 768.00 |
| 28 | 1600, 700, 300 & 800 | Construction of Hill Side Drain | | | |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|---|-------|-------------|--------------|
| | | 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 | | | |
| | | (i) Earthwork in excavation for structures as per drawing and technical specification | Cum | 199.00 | 199.00 |
| | | (ii) Plain cement concrete M10 grade | Cum | 529.00 | 4,897.00 |
| | | (iii) Stone masonry in cement mortar 1:5 | Cum | 1,300.00 | 4,209.00 |
| | | (iv) Plain cement concrete M15 grade | Cum | 529.00 | 4,423.00 |
| | | (v) Cement plaster 15 mm thick 1:4 on stone masonry | Sqm | 69.00 | 161.00 |
| | | (vi) Providing P.C.C. M20 architectural coping on top of wall | Metre | 33.00 | 360.00 |

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. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|-------|-------------|--------------|
| 29 | 1100 | 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 work, back filling, concrete and masonry work in head walls and parapets clause 1106. | | | |
| | | A 1200mmdia | Metre | 297.00 | 9,135.00 |
| | | B 1000mm dia | Metre | 188.00 | 8,411.00 |
| | | C 900mm dia | Metre | 151.00 | 7,088.00 |
| 30 | 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. | | | |
| | | C 900mm dia | Metre | 63.00 | 4,785.00 |

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. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|---|--------------------------|-------------|--------------|
| 31 | 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>ii) English and Roman</p> <p>Hyphens, commas and the like not to be measured and paid for.</p> | Per.Cm height per letter | 0.45 | 0.50 |
| | | | Per.Cm height per letter | 0.25 | 0.30 |
| 32 | | <p>B. Semi Reflective Traffic Signs</p> <p>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</p> | | | |
| | | i) 900 mm equilateral & triangle | Each | 167.00 | 2,394.00 |
| | | ii) 600 mm equilateral & triangle | Each | 167.00 | 2,312.00 |
| | | iii) 600 mm circular | Each | 167.00 | 2,366.00 |
| | | iv) 800 mm x 600 mm rectangular | Each | 167.00 | 2,450.00 |
| | | v) 600 mm x 450 mm rectangular | Each | 167.00 | 2,360.00 |
| | | vi) 600 mm x 600 mm | Each | 167.00 | 2,399.00 |
| | | vii) 900 mm side octagon | Each | 167.00 | 2,532.00 |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|--|---------------------------------|---|------|-------------|--------------|
| 33 | 1700, 800 & 300 | Direction and Place Identification signs upto 0.9 sqm size board A. Retro-reflectorised Traffic Signs (i) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide Clause 1701.2.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M-15 grade cement concrete 450 x 450 x 600 mm, 600 mm below ground level as per approved drawing and Technical Specification Clause 1701 | Sqm | 195.00 | 4,275.00 |
| 34 | 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 | Sqm | 36.00 | 74.00 |
| 35 | 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 | Sqm | 56.00 | 101.00 |
| 36 | 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 | Sqm | 55.00 | 108.00 |
| <u>KM STONES AND ROAD SIGNS BOARDS</u> | | | | | |
| 37 | 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) | Each | 874.00 | 3,795.00 |
| | | ii) Ordinary Kilometer Stone (Precast) | Each | 403.00 | 2,267.00 |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| 38 | 1700 | iii) 200 m stone (precast) Boundary Pillar | Each | 177.00 | 648.00 |
| | | 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 | Each | 123.00 | 613.00 |
| 39 | 1700 | Providing and Fixing 'Logo' of PMGSY Project 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. 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 | Each | 2,827.00 | 14,086.00 |

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. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| 40 | 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 | Cum | 199.00 | -- |
| | | II. Ordinary rock (not requiring blasting) | | | |
| | | Upto 3 m depth | Cum | 248.00 | -- |
| | | III. Hard rock (requiring blasting) | Cum | 331.00 | 448.00 |
| | | IV. Hard rock (blasting prohibited) | Cum | 124.00 | 652.43 |
| 41 | 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 | Cum | 529.00 | 4,897.00 |
| | | II. P.C.C grade M 15 | | | |
| | | (i) Nominal mix (1:2.5:5) | Cum | 529.00 | 4,906.00 |
| | | III. P.C.C. grade M 20 | | | |
| | | (i) Nominal mix (1:2:4) | Cum | 529.00 | 5,548.00 |
| | | IV. R.C.C. grade M 20 | | | |
| | | (i) Nominal mix | Cum | 561.00 | 5,851.00 |
| | | V. R.C.C. grade M 25 | | | |
| | | (i) Nominal mix | Cum | 559.00 | 6,326.00 |
| | | VI. P.C.C grade M 15 | | | |
| | | (i) Nominal mix (1:2.5:5) | Cum | 529.00 | 4,423.00 |
| 42 | 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 | Cum | 1,334.00 | 4,502.00 |
| | | (iii) In cement mortar (1:5) | Cum | 1,300.00 | 4,209.00 |

| Sr. No. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| 43 | 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 1:4:8 | Cum | 529.00 | 4,192.00 |
| 44 | 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 | Cum | 529.00 | 3,488.00 |
| 45 | 800 & 1200 | Providing and Laying cement concrete 1:5:10 with 15% plams 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. | Cum | 529.00 | 3,711.00 |
| 46 | 800 & 1200 | Providing and Laying cement concrete 1:4:8 with 15% plams 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. | Cum | 529.00 | 3,972.00 |
| 47 | 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. | Cum | 962.00 | 2,616.00 |

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. | Reference to MORD | Description | Unit | Labour Rate | Through Rate |
|---------|-------------------|---|-------|-------------|--------------|
| 48 | 600 | Pointing with cement mortar (1:3) on brickwork as per drawing and technical specification Clauses 613.3 and 1204 | Sqm | 363.00 | 536.00 |
| 49 | 600 | Plastering with cement mortar (1:4), 15 mm thick on brickwork in substructure as per technical specification Clauses 613.4 & 1204 | Sqm | 69.00 | 161.00 |
| 50 | 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 & 1302.5 | Cum | 952.00 | 2,598.00 |
| 51 | 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 | Cum | 7,457.00 | 5,085.00 |
| | | (ii) In 1:4 cement mortar | Cum | 1,401.00 | 4,727.00 |
| | | (iii) In cement mortar (1:5) | Cum | 1,300.00 | 4,201.00 |
| | | (iv) In cement lime mortar (1:6) | Cum | 1,401.00 | 4,369.00 |
| | | II. Coursed Rubble masonry (2nd sort) | | | |
| | | (i) In cement mortar (1:3) | Cum | 1,300.00 | 4,759.00 |
| | | (ii) In 1:4 cement mortar | Cum | 1,300.00 | 4,366.00 |
| | | (iii) In cement mortar (1:5) | Cum | 1,300.00 | 4,154.00 |
| | | (iv) In cement mortar (1:6) | Cum | 1,300.00 | 3,972.00 |
| | | III. Random rubble masonry | | | |
| | | (i) In cement mortar (1:5) | Cum | 1,208.00 | 4,076.00 |
| | | (ii) In cement mortar (1:6) | Cum | 1,208.00 | 3,895.00 |
| 52 | 800 | Plain / reinforced cement concrete in sub-structure as per drawings and technical specification clauses 802, 804, 805, 806, 807, 1202 and 1204 (1) upto 5 metre height P.C.C. grade M 15 Nominal mix (1:2.5:5) | Cum | 461.00 | 5,109.00 |
| 53 | 1000 | Supplying, fitting and placing HYSD bar reinforcement (Fe 415) in substructure complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202 | Tonne | 2,348.00 | 70,764.00 |

| Sr. No. | Reference to MORD | Description | Unit | Labour Rate | Through Rate |
|---------|-------------------|--|------|-------------|--------------|
| 54 | 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 with 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 | Nos. | 9.00 | 328.00 |
| 55 | 1200 | Backfilling behind abutment, wing wall and return wall complete as per drawings & technical specification Clause 1204.3.8 | | | |
| | | l) Granular material | Cum | 342.00 | 768.00 |
| 56 | 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 | Cum | 408.00 | 1305.00 |
| 57 | 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 | Rmt | 33.00 | 360.00 |

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.

SUPERSTRUCTURE

58

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. | Reference to MORD Specification | Description | Unit | Labour Rate | Through Rate |
|---------|---------------------------------|--|------|-------------|--------------|
| 62 | 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 | cum | 202.00 | 2,324.00 |
| 63 | 1303 | Providing and laying of dry rubble flooring complete as per drawings and technical specifications Clause 1303.3 | cum | 561.00 | 2,115.00 |