GOVT. OF ASSAM

PUBLIC WORKS ROADS DEPARTMENT

SCHEDULE OF RATES FOR RURAL ROADS FOR ALL DIVISIONS UNDER PWRD, ASSAM

2016-2017

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Commissioner & Special Secretary
Public Works Roads Department, Assam
Dispur, Guwahati - 6

FOREWORD

Govt of India as well as State GOVT has given specific importance for development of Rural Roads. Indian Road Congress on behalf of Ministry of rural development, Govt of India published "Specifications for Rural Roads & cross drainage works" and Standard Data book for Analysis of Rates for Rural Roads" with a consideration for development and standardization of specifications & rates all over the country.

As per above data book the schedule of rates for Rural roads for all Divisions under Public Works Department, Assam was first published in the year 2005-06. As per guidelines for preparation of rates using MORD's Standard data book, the Schedule of Rates is required to be updated every year. Accordingly the Schedule of Rates for Rural Roads has been updated for the year 2016-17. Considering the increase of labour rate as well as cost of different materials like cement, steel, Bitumen etc.

The Schedule of rates for Rural Roads is as per "Specification for Rural Roads 2004" published by IRC is applicable for works funded by agencies like World Bank, ADB etc in addition to PMGSY works, as these funding agencies insisted upon the department to follow the referred Data Book in preparing the DPR for their projects.

As per current revision of the specifications of Data Book in 2014 some new items has also been incorporated in this edition alongwith Long span Bridges as per MORTH Guidelines.

This schedule is modelled for finished item rates. The rates for the basic materials, obtained from various GOVT. Agency, have been adopted for computation. This S.O.R.shall come into force w.e.f. 01-05-2016.

Utmost efforts have also been made to collect various up-to-date market inputs from different sources, compile and study elaborately in the light of current price index and to incorporate the same in the present schedule of rates. However, rates involving the commodities like cement, Bitumen, Steel the competent authority as and when deem necessary may review. Every endeavor has been made to make the edition of SOR free from errors. In spite of that if any error/omission is noticed the same may kindly be brought to the notice of the undersigned for appropriate rectification.

I am sure the edition of the SOR in its present from would prove to be very useful to all practicing Rural Roads Engineers.

(M.C. Boro)
Commissioner & Special Secretary, PWR Deptt.
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CERTIFICATE

Certified that the schedule of Rates for Rural Roads for all divisions under PWRD, Assam for 2016-2017 has been prepared on the basis of Standard Data Book for Analysis of Rates for Rural Roads published by Indian Road Congress on behalf of the National Rural Development Agency, Ministry of Rural Development, Govt. of India, New Delhi.

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BASIC APPROACH AND GENERAL CONDITIONS AND ASSUMPTIONS FOR THE PREPARATION OF STANDARD DATA BOOK

The basic approach for the preparation of Standard Data Book 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 tyre 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 and contractors profit : The overheads and contractors profit is considered @12.5per cent for items of road works and 20 per cent for items of bridge works.

The overheads are considered as per provision of Data Book considering additional percentage as indicated in the Data Book for prevailing rate of tax in the state,This is assumed to include interalia th following elements.

i. Site accomodation,setting up plant,accessroad,water supply,electricity and general site arrangements.

ii. Site office infrastructure.

iii. Expenditure on:

Corporate office of the Contractor

Site supervision by the Contractor

Preparation of "as built" drawings

iv. Mobilization/demobilization of sources.

v. Labour camps with minimum amenities, required as per labour laws.

vi Setting up of laboratories for quality control,field and laboratory testing for control of quality of various items of and documentation of test result as per requrement of MORD specifications.

vii Minor tools and plants(T&P) including needle vibrator requred for concrete work.

viii 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).

ix Taking of trial pits and bore holes

x Watch and ward

xi Arrangement for traffic and traffic management during construction

xii Expenditure on safe guarding environment during construction.

xiii Sundries

xiv Financing expenditure of the contractor.

xv Workinsurance/compensation.

xvi Sales/Turnover tax has been assumed at 4%.

5 Contractors Profit:

5.1 Contractors profit & Overheads is considered @ 12.5 per cent uniformly for Road works and 20 % for bridge works

5.2 VAT @ 5 % and Assam building and other construction workers welfare cess @ 1%has been added in the analysis over above.

6 General:

6.1. The section and clause numbers refer to the MORD specifications for Rural roads 2004

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 The sources of all materials and samples of materials are required to be approved by the Engineer before start of such work.

6.5 For reinforcing steel both HYSD and TMT bars conforminf to IS:1786 have been considered.

6.6 For pipe culverts both NP3 and NP4 pipes have been considered.

6.7 **A premium of 10% may be considered in the estimates only in emergency works within city area and whereever required only after being duly certified by respective S.E. concerned.**

6.8 As per latest revised version of MORD specification for rural Roads Specific importance to some new items like cold mix, Semi dense Biituminous concrete, soil stabilization in subgrade and Base, use of locally available marginal materials, Industrial wastes, provisions of proper road signs and othe rtraffic control devices, Geosynthetics, Jute geo textiles alongwityh constructionof long span Bridges has been given and incorporated in this edition as per vesion of MORTH.

6.9 Quality control of work shall be governed by the relevent MORD specifications.

6.10 Apremium in percentage over the S.O.R. 2015-16 as indicated below may be allowed over the rates of this S.O.R.for preparation of estimates of work to be executed in the following areas to cater for the probable extra cost involved due to the remotness of these places from the marketing centres of key construction materials,difficulties in transportation of materials and dearth of skilled labourers.

Sl No.	District/Sub-division	Premium in %	Remarks
1.	Dhemaji District	5%	**1. These premiums are applicable for preparation of Estimates only.**
2.	Karbialong District	10%	
3.	Dima Hasao	10%	
4.	Majuli Sub-Division	10%	**2.These premiums are not meant for tendering and billing purposes.**
5.	Sadia Sub division	10%	

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 labour wages are as per rate fixed by the state government.The rates of material are asper the prevailing market rate.

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.

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 associate machine like HMP,Paver,etc.In such cases the hire chargees of Road rollers have been multipied with a factor of 0.65 to account for the idle period whereever 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 considered for the compacted quantities.

8.8. A water tank 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 One mate has been provided for 25 labours for all items of works.

9.2 The labour wages should be as per rates fixed by state Government.

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 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 from private land. For borrowing Earth from Govt. land Forest Royality is to be paid by the contractor.

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 include all octroi charges, toll tax, sale tax, VAT, municipal taxes,Forest royalityand 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 gradwes of concrete covered by the Data Book in accordance with MORD specification 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 rates accounts for input of material by weight and use of ordinary mixer

12.3. Use of vibrator for all concreting work hsas been included in the items.

12.4. Ten per cent extra cement may be provided for concreteing under water, where require.

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:

13 Measurement and Rates

13.1 Measurement of various items and their units shall be defined in the respective clauses of MORD specifaction.

13.2 The rates of various items of work shall include all sub items defined in the respective clauses of MORD specifications.

14 Privileged Document

The Schedule of Rates is 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.

PART-A

ROAD WORKS

CHAPTER-1

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

(a) Preamble

1. The rates of loading and unloading of various items include stacking.

2. The rates 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 rates for haulage of materials has been provided in terms of tonne-kilo metre (tkm) for ease of adoption depending upon the lead in km and load in tonnes.

4. The cost of carriage will vary deopending upon the riding surface of the road.Provision has accordingly been made considering surfaced roads,subsurface gravel roadsand katcha tracks.

5. Rates for carriage of materials is exclusive of the loading ,unloading and stacking and this has to be added as applicable.

6. Carriage of materials if done by boats shall be paid at the same rates as given for carriage of materials by road.

Chapter 1
LOADING, UNLOADING, CARRIAGE CRUSHING OF MATERIALS AND SETTING OUT

Item No.	Descriptions	Unit	Rate
1.1	**Loading and Unloading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by Manual Means**		
	(i) Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by manual means including a lead upto 30 m	cum	97.00
	(ii) Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by mechanical means including a lead upto 30 m	cum	48.00
	(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	48.00
	(iv) Unloading of Earth,Sand, Moorum,Manure,Fly ash, by manual means including lead upto 30M	cum	31.00
1.2	**Loading and Unloading Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by Mechanical Means**		
	i) Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by mechanical means including a lead upto 30 m	cum	49.00
	ii) Loading of earth,sand,moorum,manure,fly ash by mechanical means including a lead upto 30 M	cum	43.00
	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	12.00
1.3	**Loading, Unloading and Stacking of Bricks by Manual Means**		
	i) Loading of Bricks by manual means including a lead upto 30 m	1000 Nos	167.00
	ii) Unloading and Stacking of Bricks by manual means including a lead upto 30 m	1000 Nos	167.00

Item No.	Descriptions	Unit	Rate
1.4	**Loading and Unloading of Cement by Manual Means**		
	i) Loading of Cement by manual means including a lead upto 30 m	t	117.00
	ii) Unloading of Cement by manual means including a lead upto 30 m	t	117.00
1.5	**Loading and Unloading of Structural Steel and Steel Bars by manual means**		
	i) Loading of Structural Steel, Steel Bars by manual means including a lead upto 30 m	t	123.00
	ii) Unloading of Structural Steel, Steel Bars by manual means including a lead upto 30 m	t	123.00
1.6	**Loading and Unloading of Bitumen Drums by Manual Means**		
	i) Loading of Bitumen Drums by manual means including a lead upto 30 m	t	140.00
	ii) Unloading of Bitumen Drums by Manual Means including a lead upto 30 m	t	132.00
1.7	**Loading and Unloading of Timber by Manual Means**		
	i) Loading of Timber by manual means including a lead upto 30 m	t	213.00
	ii) Unloading of Timber by manual means including a lead upto 30 m	t	213.00
1.8	**Loading and Unloading of C.C. Blocks, Kerb, etc.**		
	i) Loading with care C.C. Blocks, km Stone, 200 m Stone, Boundary Pillar, Kerb, Channel, Bond Stone, etc. by manual means including a lead upto 30 m	cum	309.00
	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	309.00
1.9	**Loading and Unloading of Hume Pipes**		
	i) Loading of RCC Hume pipes by mechanical means including a lead upto 30 m		
	A. 1000 / 1200 mm dia Hume pipe	per pipe	73.00
	B. 750 mm dia Hume pipe	per pipe	44.00
	C. 600/450 mm dia Hume pipe	per pipe	31.00

Item No.	Descriptions	Unit	Rate
	ii) **Unloading of RCC Hume pipe by manual means including a lead upto 30 m**		
	A. 1000/1200 mm dia RCC Hume pipes	per pipe	403.00
	B. 750 mm dia Hume pipe	per pipe	336.00
	C. 600/450 mm dia Hume pipe	per pipe	252.00
	iii) **Unloading of RCC Hume pipes by mechanical means including a lead upto 30 m**		
	A. 1000/1200 mm dia Hume pipe	per pipe	49.00
	B. 750 mm dia Hume pipe	per pipe	29.00
	C. 600/450 mm dia Hume pipe	per pipe	21.00
1.10	**Haulage excluding Loading & Unloading**		
	Haulage of materials by tipper excluding cost of loading,		
	unloading and stacking.		
	Case-I : Surfaced Road	t.km cum/km	7.00 12.75
	Case-II: Unsurfaced Gravel Road	t.km cum/km	9.00 16.40
	Case-III: Katcha Track and Track in River Bed/Nallah Bed and Choe Bed	t.km cum/km	14.00 25.50
1.16	**Setting Out**		
	Unit=1Km The analysis of rate per km shall account for the following: (I) Reference benchmark one no.		
	(ii) Working benchmark 4 nos. per Km and near all drainage structure and bridges.		
	(iii) Reference pillars/Burjees @ 50 m interval on both sides of formation width.		
	(iv) The marking of centre line setting out curves and recording of levels,etc. by the surveyor will be incidental to the work and no extra payment shall be made for the same.		
	(v) Typical benchmark as per Drawing 200.1	each	6593.00
	(vi) Typical reference pillar as per Drawing 200.2	each	3332.00

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 masonary 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.

13 All minor Tools & Plants (T&P) items required for dismantling have been considered to have been included in overhead charges.

Chapter 2

SITE CLEARANCE

Item No.	Descriptions	Unit	Rate
2.1	**Clearing Grass and Removal of Rubbish** Clearing grass and removal of rubbish up to a distance of 30 m outside the periphery of the area as per Technical Specification Clause 201.		
	By Manual Means	hectare	8,384.00
2.2	**Clearing and Grubbing Road Land** Clearing and grubbing road land including uprooting wild vegetation, grass, bushes, shrubs, saplings and trees of girth upto 300 mm, removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per Technical Specification Clause 201.		
	(I) By Manual Means		
	(A) In area of non thorny jungle	hectare	30,802.00
	In area of thorny jungle	hectare	41,887.00
	(ii) By Mechanical Means		
	In area of non-thorny jungle	hectare	24,759.00
	In area of thorny jungle	hectare	30,108.00
2.3	**Cutting of Trees including Cutting of Trunks, Branches and Removal of Stumps** Cutting of trees, including cutting of trunks, branches and removal of stumps & roots, refilling, compaction of backfilling and stacking of serviceable material by manual means with all lifts as per Technical Specification Clause 201.		
	A. Lead upto 100 m		
	i) Girth above 300 mm to 600 mm	each	160.00
	ii) Girth above 600 mm to 900 mm	each	291.00
	iii) Girth above 900 mm to 1800 mm	each	556.00
	iv) Girth above 1800 mm to 2700 mm	each	1,043.00
	v) Girth above 2700 mm to 4500 mm	each	2,164.00
	vi) Girth above 4500 mm	each	6,215.00

Item No.	Descriptions	Unit	Rate
	B. Lead upto 1000 m		
	i) Girth above 300 mm to 600 mm	each	173.00
	ii) Girth above 600 mm to 900 mm	each	335.00
	iii) Girth above 900 mm to 1800 mm	each	608.00
	iv) Girth above 1800 mm to 2700 mm	each	1,131.00
	v) Girth above 2700 mm to 4500 mm	each	2,262.00
	vi) Girth above 4500 mm	each	6,459.00
2.4	**Uprooting and Removing Stumps & Roots** Uprooting and removing stumps & roots,compaction of backfilling and staking of servicable material by manual means as per Technical Specification clause 201.		
	A. Lead upto 100 m		
	i) Girth above 300 mm to 600 mm	each	93.00
	ii) Girth above 600 mm to 900 mm	each	150.00
	iii) Girth above 900 mm to 1800 mm	each	313.00
	iv) Girth above 1800 mm to 2700 mm	each	612.00
	v) Girth above 2700 mm to 4500 mm	each	1,238.00
	vi) Girth above 4500 mm	each	3,510.00
	B. Lead upto 1000 m		
	i) Girth above 300 mm to 600 mm	each	96.00
	ii) Girth above 600 mm to 900 mm	each	162.00
	iii) Girth above 900 mm to 1800 mm	each	327.00
	iv) Girth above 1800 mm to 2700 mm	each	631.00
	v) Girth above 2700 mm to 4500 mm	each	1,263.00
	vi) Girth above 4500 mm	each	3,632.00
2.5	**Dismantling of Structures** Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 m as per Technical Specification Clause 202.		
	I. By Manual Means		
	(A) Lime Concrete	cum	241.00
	(B) Cement Concrete	cum	291.00

Item No.	Descriptions	Unit	Rate
	(C) Reinforced Cement Concrete	cum	716.00
	II By Mechanical Means		
	(A) Cement Concrete	cum	337.00
	(B) Reinforced Cement Concrete	cum	452.00
2.6	**Dismantling Brick/Tile Work** Dismantling of existing structures like culverts, bridges, retaining walls and other structures comprising of brick masonry, including disposal of unserviceable material and stacking the serviceable material with all lift and lead of 1000 m as per Technical Specification Clause 202.		
	(A) Lime mortar	cum	157.00
	(B) Cement mortar	cum	195.00
	(C) Mud Mortar	cum	144.00
	(D) Dry Brick Pitching or Brick Soling	cum	136.00
2.7	**Dismantling Stone Masonry as per Technical Specification Clause 202.** Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of stone masonry, including disposal of unserviceable material and stacking the serviceable material with all lift and lead of 1000 m as per Technical Specification Clause 202.		
	(A) Rubble Stone Masonry in Lime Mortar	cum	186.00
	(B) Rubble Stone Masonry in Cement Mortar	cum	159.00
	(C) Rubble Stone Masonry in Mud Mortar	cum	157.00
	(D) Dry Rubble Masonry	cum	149.00
	(E) Dismantling Stone Pitching / Dry Stone Spalls	cum	145.00
	(F) Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials	cum	170.00
2.8	**Dismantling Wood Work Wrought and Planed Fixed in Frames of Trusses upto a height of 5 m above Plinth Level as per Technical Specification Clause 202.**	cum	357.00
2.9	**Dismantling Steel Work in all Types of Sections upto a height of 5 m above Plinth Level excluding Cutting of rivet as per Technical Specification Clause 202.**		
	(A) Including dismembering	t	831.00
	(B) Excluding dismembering	t	625.00

Item No.	Descriptions	Unit	Rate
	(C) Extra over Items (A) and (B) for cutting rivets	t	6.00
2.10	Scraping of bricks dismantled from brick work including stacking as per Technical Specification Clause 202.	1000 Nos.	734.00
2.11	Scraping of Stone from Dismantled Stone Masonry as per Technical Specification Clause 202. In Cement or Lime Mortar	cum	294.00
2.12	Scraping Plaster in Lime or Cement Mortar from Brick / Stone Masonry as per Technical Specification Clause 202.	sqm	10.00
2.13	**Removing all types of Hume pipes and stacking within a lead of 1000 m including Earthwork and Dismantling of Masonry Works as per Technical Specification Clause 202.**		
	(A) Upto 600 mm dia Hume pipe	m	109.00
	(B) Above 600 mm to 900 mm dia Hume pipe	m	147.00
	(C) Above 900 mm dia Hume pipe	m	252.00
	Note : 1. The excavation of earth,dismantling of stone masonary work in head walls and protection works is not included which is to be measured and paid seperately.		
	2. Credit for retrives stone from masonary work may be taken as per actual availability.		
2.14	**Dismantling of Flexible Pavements** Dismantling of flexible pavements and disposal of dismantled materials upto a lead of 100 m, stacking serviceable and unserviceable materials separately as per Technical Specification Clause 202		
	I. By Manual Means		
	(A) Bituminous Courses	cum	441.00
	(B) Granular Courses	cum	330.00
	II. By Mechanical Means		
	(A) Bituminous Courses	cum	214.00
2.15	**Dismantling of Cement Concrete Pavements as per Technical Specification Clause 202.** Dismantling of cement concrete pavements by mechanical means using pneumatic tools breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials upto a lead of 1000 m, stacking serviceable and unserviceable materials separately	cum	881.00

Item No.	Descriptions	Unit	Rate
2.16	**Dismantling Guard Rails** Dismantling guard rails by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m, stacking serviceable materials and unserviceable materials separately as per Technical Specification Clause 202.	running m	50.00
2.17	**Dismantling Kerb Stones** Dismantling kerb stones by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m as per Technical Specification Clause 202.	running m	11.00
2.18	**Dismantling Kerb Stone Channels** Dismantling kerb stone channels by manual means and disposal of dismantled material with all lifts and upto a lead of 1000 m as per Technical Specification Clause 202.	running m	16.00
2.19	**Dismantling Kilometre Stones** Dismantling of kilometre stones including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and backfilling of pit as per Technical Specification Clause 202.		
	(A) 5th km Stone	m	230.00
	(B) Ordinary km Stones	m	141.00
	(C) 200 m Stones	m	29.00
2.20	**Dismantling of Fencing** Dismantling of barbed wire fencing / wire mesh fencing including posts, foundation concrete, backfilling of pit by manual means including disposal of dismantled material with all lifts and upto a lead of 1000 m, stacking serviceable material and unserviceable material separately as per Technical Specification Clause 202.	running m	29.00
2.21	**Dismantling of CI Water Pipe Line** Dismantling of CI water pipe line 600 mm dia including disposal with all lifts and lead upto 1000 m and stacking of serviceable material and unserviceable material separately under supervision of concerned department as per Technical Specification Clause 202.	running m	87.00
2.22	**Removal of Cement Concrete Pipe of Sewer Gutter** Removal of cement concrete pipe of sewer gutter 1500 mm dia under the supervision of concerned department including disposal with all lifts and upto a lead of 1000 m and stacking of	running m	162.00

Item No.	Descriptions	Unit	Rate
	serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works as per Technical Specification Clause 202.		
2.23	**Removal of Telephone/Electric Poles and Lines** Removal of telephone/electric poles with wires including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and upto a lead of 1000 m and stacking the serviceable and unserviceable material separately as per Technical Specification Clause 202.	each	108.00

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.

6 The replacement of unsuitable soil by suitable soil shall be provided separately in the estimate. The rate analysis for removal of unsuitable soil does not provide for replacement by suitable soil.

7 In cases where embankment is constructed with earth taken from roadway, the cost of depositing the earth at the site of embankment is already included in the disposal of excavated earth and, therefore, the input of dozer for spreading earth can be deleted.

8 For narrow and restricted areas, plate compactor has been proposed for compaction to achieve the desired density.

9 In case excavated rock is found suitable for incorporation in works, suitable credit for the available rock shall be given.

10 For excavation of structures refer to Chapter 11 dealing with items of Foundation.

11 The possibility of using the blasted rock fragments for backfilling behind structures or backfilling of foundation pits or filling in medians/separators or use in service road shall be examined before proposing disposal of excavated rock.

12 For inhabited areas, controlled blasting with limited charges of explosives has been provided. This involves smaller drill holes and additional requirement of electric detonators. Provision has been made accordingly.

13 Any work involved for crossing of water courses for irrigation purpose, etc. will be priced under respective items, like, excavation, grubbing, clearing, etc. for which rate analysis have separately been made.

14 Earth excavated from drains can be used in roadway berms. Hence carriage for disposal of same is not provided.

15 In case of rock fill embankment, it is assumed that material is available at site from rock cutting.

16 For widening of existing pavement less than 1.8 m, the rates for all items of this Chapter may be increased by 30 per cent.

Chapter 3
EARTHWORK, EROSION CONTROL AND DRAINAGE

Item No.	Descriptions	Unit	Rate
3.1	**Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means**		
	a) **Manual means** Scarifying existing granular surface to a depth of 50 mm and disposal of scarified material with a lift upto 3 m and leads upto 1000 m as per Technical Specification Clause 301.4.	sqm	16.00
	b) **Mechanical means** Scarifying existing granular surface to adepth of 50 mm and disposal of scarified material with a lift upto 3 m and lead upto 1000m as per Technical specification Clause 301.4	sqm	4.00
3.2	**Scarifying Existing Bituminous Surface to a Depth of 150 mm by Mechanical Means** Scarifying the existing bituminous road surface to a depth of 150 mm and disposal of scarified material with a lift upto 3 m and lead upto 1000 m as per Technical Specification Clause 301.4.	sqm	5.00
3.3	**Construction of Embankment with Material Obtained from Roadway Cutting** Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of Tables 300.1 and 300.2 as per Technical Specification Clause 301.5	cum	59.00
3.4	**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		
	(I) Private Land	cum	155.00
	(ii) Govt. Land	cum	155.00
3.5	**Excavation in Cutting in Soil by manual means with lead upto 50 m** Excavation for roadway in soil using manual means for carrying of cut earth to embankment site with a lift upto 1.5 m and lead upto 50 m as per Technical Specification Clause 302.3 (Manual should be use where machines can not be deployed due to site condition)	cum	79.00

Item No.	Descriptions	Unit	Rate
	ii) **Excavation in Soil with Dozer with lead upto 100 m** Excavation for roadway in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 m, including trimming bottom and side slopes in accordance with requirements of lines, grades and cross-sections.	cum	49.00
	iii) Excavation in Soil using Hydraulic Excavator and Tippers with disposal upto 1000 m Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross-sections, and transporting to the embankment location with a lift upto 1.5 m and lead upto 1000 m as per Technical Specification Clause 302.3	cum	53.00
3.6	**Excavation in Marshy Soil** Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with a lift upto 1.5 m and lead upto 1000 m, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross- sections as per Technical Specification Clause 302.3.6.	cum	59.00
3.7	**Removal of Unsuitable Soil with Disposal upto 1000 m** Removal of unsuitable soil including excavation, loading and disposal upto 1000 m lead but excluding compaction ground supporting embankment subgrade replacement by suitable soil, which shall be paid separately as per Clause 303.5.2 as per Technical Specification Clause 302.3.11	cum	53.00
	Note: This item does not include replacement of unsuitable soil by suitable soil Replacement,Where required, is to be provided and paid seperately under Clause 303.5.2		
3.8	**Excavation in ordinary Rock by manual means** **i) Excavation in ordinary rock using manual means** including loading in a truck and carrying of excavated material to embankment site with a lift upto 1.5 m and lead upto 50 m as per Technical Specification Clause 302.3.5. (Manual means should be use where machines can not be deployed due to site condition)	cum	122.00
	ii) Excavation in Ordinary Rock with Dozer with lead upto 100 m Excavation for roadway in ordinary rock by deploying a dozer D-50 including cutting and pushing the cut earth to site of embankment upto a distance of 100 m (average lead 50 m), trimming bottom and side slopes in accordance with the requirements of lines, grades and cross-sections with lift upto 1.5 m.	cum	53.00

Item No.	Descriptions	Unit	Rate
	iii) Excavation in Ordinary Rock using Hydraulic Excavator and Tippers with disposal upto 1000 m Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site with a lift upto 1.5 m and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross-sections as per Technical Specification Clause 302.3.5	cum	80.00
3.9	**Excavation in Hard Rock (requiring blasting) with disposal upto 1000 m** **i) Excavation for roadway** in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross-sections, loading and disposal of cut rock with a lift upto 1.5 m and leads upto 1000 m as per Technical Specification Clause 302.3.5	cum	154.00
	ii) Excavation in Hard Rock (blasting prohibited) Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal with a lift upto 1.5 m and lead upto 200 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross- sections as per Technical Specification Clause 302.3.5		
	A. Manual Means	cum	582.00
	B. Mechanical Means	cum	380.00
	iii) Excavation in Hard Rock (controlled blasting) with disposal upto 1000 m Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross-sections, loading and disposal of cut rock with a lift upto 1.5 m and leads upto 1000 m as per Technical Specification Clause 302.3.5	cum	174.00
3.10	**Stripping, Storing and Relaying Top Soil from Right-of-Way (R.O.W)** Striping,storing and preservatio of top soil by keeping it damp in stock piles and keep wet till it is used by road side at 15 M interval and reapplication on embankment slopes,cut slopes and other areas in localities where the available embankment mate	cum	128.00
3.11	**Stripping,Storing and Relaying Top soil from Borrow areas in Agricultural fields.** Stripping of top soil from borrow areas located in agriculture fields, storing at a suitable place, spreading and relaying after taking the borrow earth to maintain fertility of the agricultural	cum	92.00

Item No.	Descriptions	Unit	Rate
	field, finishing it to the required levels to the satisfaction of the farmer/land owner as per Technical Specification Clause 302.3.2.		
3.12	**Turfing with Sods** Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the Engineer including preparation of ground, fetching of sods and watering as per Technical Specification Clause 309.	sqm	17.00
3.13	**Seeding and Mulching** Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion @ 0.23 litre per sqm and laying and fixing jute netting, including watering for 3 months all as per Technical Specification Clause 310.	sqm	96.00
3.14	**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.		
	(I) Private Land	cum	209.00
	(ii) Govt. land	cum	209.00
3.15	**Compacting Original Ground** (i) Compacting original ground supporting embankment 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 301.4.1.	cum	20.00
	(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	32.00
3.16	**Repairs of damages caused by rain/spillage of water** Preparation and surface treatment of formation by removing mud and slurry, watering to the extent needed to maintain the desired moisture content, trimming to the required line, grade, profile and rolling with three wheel 80-100 kN static roller, complete as per Technical Specification Clause 301.5.5.1	sqm	2.00

Item No.	Descriptions	Unit	Rate
3.17	**Presplitting Rock Excavation Slopes** Carrying out excavation in hard rock to achive a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and spaced drill holes, collection of the excavated rock by a D-50 dozer, loading in tipper by a front end loader and disposing of the material with a lift upto 1.5 m and lead upto 1000 m as per Technical Specification Clause 304.3	sqm	100.00
3.18	**Construction of Embankment with Flyash/Pond ash available from Coal or Lignite Burning Thermal Plants as Waste Material** Construction of embankment with flyash conforming to Table 1 of IRC:SP:58 obtained from coal or lignite burning thermal power stations as waste material, spread and compacted in layer of 200 mm thickness each at OMC, all as specified in IRC:SP:58 and as per approved plans with lead upto 1000 m as per Technical Specification Clause 306.	cum	184.00
3.19	**Surface Drains in Soil** (i) 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	m	42.00
	(B) Mechanical Means	m	23.00
	(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	m	63.00
	(B) Mechanical Means	m	28.00
	(iii) **Surface Drains in Hard Rock** Rate per m may be worked out based on quantity of hard rock as per design. For rate of hard rock cutting refer releavant item in this chapter.		
	Note: Where lining of drain is provided,quantity shall be worked out based on approved design and drawing and priced on rate		

Item No.	Descriptions	Unit	Rate
3.20	**Chute Drains**		
	A. Providing chute drains across embankment slopes in approches of bridges and on horizontal curves as per drawings.	m	-
	(a) Earthwork in exavation for foundation of structure as per drawings and technical specification clause 307 including setting out construction of shoring and bracing deleterious matter, dressing of sides and bottom and backfilling with approved material		
	Rate as per item No. 11.1 of Chapter 11.	cum	
	(b) Providing and laying plain cement concrete M15 grade Rate as per 12.5 of Chapter 12	cum	
	© Brick masonry in cement morter 1:5. Rate asper item no 12.1 (iii) of Chapter 12	cum	
	(d) Plastering with cement morter 1:4. Rate as per item no 12.3 of Chapter 12.	cum	
	(e)Providing P.C.C. M 20 coping on the top of chute walls. As per item no 12.13 of Chapter 12.	cum	
	B Providing chute drains across embankment slopes in approches of bridges and on horizontal curves as per drawings.	m	-
	(a) Earthwork in exacavation for foundation of structure as per drawing and technical specifications clause 307 including setting out construction of shoring and bracing deleterious matter, dressing of sides and backfilling with approved material (By manu		
	Rate as per item no 11.1 of chapter 11.	cum	
	(b) Providing and laying plain cement concrete M 15 Grade		
	Rate as item No.12.5 of Chapter 12.	cum	
	© Coursed ruble stone masonary (2 nd sort) in cement morter 1:4		
	Rate as item No.12.4 II of Chapter 12.	cum	
	(d) Plastering with cement morter 1:4		
	Rate as per item No. 12.3 of Chapter 12.	cum	
	(e) Providing P.C.C. M 20 Coping on the top of chute walls		
	Rate as per item No. 12.13 of chapter 12	cum	

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

Preamble:

1. For construction of sub-base, two alternatives as under have been provided.
   a. Mix in place method
2. 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.
3. 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.
4. 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.
5. 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.

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

Item No.	Descriptions	Unit	Rate
4.1	**Granular Sub-base with Well Graded Material (Table 400.1) (Only for PMGSY work)**		
	(A) **By Mix in Place Method** Construction of granular sub-base by providing well graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with smooth wheel roller to achieve the desired density, complete as per Technical Specification Clause 401.		
	(I) For Grading I Material	cum	1,357.00
	(ii) For Grading II Material	cum	1,245.00
	(iii) For Grading III Material	cum	1,222.00
4.2	**Gravel/Soil-Aggregate Base (Table 400.2) Grading A (Only for PMGSY work)**		
	i) Construction of gravel/soil-aggregate base by providing well graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with three wheel 80-100 kN static roller to achieve the desired density, complete as per Technical Specifications Clause 402	cum	1,454.00
	ii) Gravel/Soil-Aggregate Base (Table 400.2) Grading B Construction of granular sub-base by providing well graded material, spreading in uniform layers with motor 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	1,375.00
	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 motor 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	1,345.00

Item No.	Descriptions	Unit	Rate
	iv) Gravel/Soil Aggeregate Base/Sub-Base Nominal Maximum size Grading 80 mm (Table 2.3 of IRC SP 77-2008 Construction of Gravel/soil aggregate sub-base/Base by providing well graded material of nominal size grading 80 mm as per Table 2.3 of IRC SP 77-2008, spreading in uniform layers with tractor mount appropriate grading arrangement on prepared surface,mixing by mix in place method at OMC with tractor mount appropriate rotavator attachment and compaction with three wheel 80-100 Kn capacity to achieve complete as per specification contained in para 2.2,3.6,3.7 of IRC SP 77-2008.	cum	1168.00
	v) Gravel/Soil Aggeregate Base/Sub-Base Nominal Maximum size Grading 40 mm (Table 2.3 of IRC SP 77-2008 Construction of Gravel/soil aggregate sub-base/Base by providing well graded material of nominal size grading 40 mm as per Table 2.3 of IRC SP 77-2008, spreading in uniform layers with tractor mount appropriate grading arrangement on prepared surface,mixing by mix in place method at OMC with tractor mount approprite rotavator attachment and compaction with three wheel 80-100 kn static roller capacity to achieve the desired density complete as per specification contained in para 2.2,3.6 and 3.7 of IRC SP 77-2008	cum	1117.00
	vi) Gravel/Soil Aggeregate Base/Sub-Base Nominal Maximum size Grading 20 mm (Table 2.3 of IRC SP 77-2008 Construction of Gravel/soil aggregate sub-base/Base by providing well graded material of nominal size grading 40 mm as per Table 2.3 of IRC SP 77-2008, spreading in uniform layers with tractor mount appropriate grading arrangement on prepared surface,mixing by mix in place method at OMC with tractor mount approprite rotavator attachment and compaction with three wheel 80-100 kn static roller capacity to achieve the desired density complete as per specification contained in para 2.2,3.6 and 3.7 of IRC SP 77-2008	cum	1073.00
4.3	**Gravel/Soil-Aggregregate surface course (table 400.3) (Only for PMGSY work)**		
	i) Construction of granular sub-base by providing well graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with three wheel 80-100 kN static roller capacity to achieve the desired density, complete as per Technical Specification Clause 402	cum	1,165.00

Item No.	Descriptions	Unit	Rate
	ii) Gravel/Soil Aggeregate Base/Sub-Base Nominal Maximum size Grading 10 mm (Table 2.3 of IRC SP 77-2008 Construction of Gravel/Soil aggregrete Base/Surface by providing well graded material of nominal maximum size grading 10 mm as per Table 2.3 of IRC SP 77-2008,spreading in uniform layers with tractor mount appropriate grading arrangement on prepared surface,mixing by mix in place method at OMC with tractor mount appropriate rotavator attachment and compaction with three wheel 80-100kn static roller capacity to achieve the desired density complete as per specifications contained in para 2.2,3.6 and 3.7 of IRC SP 77-2008.	cum	981.00
	iii) Gravel/Soil Aggeregate Base/Sub-Base Nominal Maximum size Grading 5 mm (Table 2.3 of IRC SP 77-2008 Construction of Gravel/Soil aggregrete Base/Surface by providing well graded material of nominal maximum size grading 5 mm as per Table 2.3 of IRC SP 77-2008, spreading in uniform layers with tractor mount appropriate grading arrangement opn prepared surface,mixing by mix in place method at OMc with tractor mount appropriate rotavator attachment compacted with three wheel 80-100kn static roller capacity to achieve the desired density complete asper para 2.2,3.6 and 3.7 of IRC SP 77-2008.	cum	937.00
4.4	**Lime Stabilisation for Improving Subgrade** Laying and spreading available soil in the subgrade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 2 per cent slaked lime having minimum 70 per cent of contents of CaO, grading with motor grader and compacting with the smooth wheel road roller at OMC to the desired density to form a layer of improved Sub-grade as per Technical Specification Cluase 403.		
	(A) By Manual Means	cum	311.00
	(B) By Mechanical Means	cum	295.00
4.5	**Lime Treated Soil for Sub-Base** Providing, laying and spreading soil on a prepared sub-grade, pulverising, mixing the spread soil in place with rotavator with 4 per cent slaked lime with minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to achieve atleast 98 per cent of the max dry density to form a layer of sub-base as per Technical Specification Clause 403.	cum	530.00

Item No.	Descriptions	Unit	Rate
4.6	**Cement Treated Soil Sub-Base/Base** Providing, laying and spreading soil on a prepared sub-grade, pulverising, adding the designed quantity of cement to the spread soil, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base as per Technical Specification Clause 404. For 4 per cent quantity of cement by weight of soil	cum	790.00
4.7	**Water Bound Macadam Sub-base/base** **(Only for PMGSY work)**		
	1) **WBM Grading 1** **Using stone screening Type-A 13.2 mm for Gr.I** Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller in stages to proper grade and camber, applying and brooming, stone screening/binding materials to fill-up the interstices of coarse aggregate, watering and compacting to the required density Grading 1 as per Technical Specification Clause 404.		
	(A) By Manual Means	cum	2,037.00
	(B) By Mechanical Means	cum	2,085.00
	2) **WBM Grading 2** **Using stone screening Type-B 11.2 mm for Gr.II** 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	2,168.00
	(B) By Mechanical Means	cum	1,966.00
	3) **WBM Grading 3** **Using stone screening Type-B 11.2 mm for Gr.III**		

Item No.	Descriptions	Unit	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 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	2,185.00
	(B) By Mechanical Means	cum	2,056.00
4.8	**Water Bound Macadam with Crushable Screenings (Only for PMGSY work)**		
	1) WBM Grading 1 **Using crushable screening such as moorum gravel for Gr.I** 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, crushable screening 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	1,938.00
	B) By Mechanical Means	cum	1,741.00
	2) WBM Grading 2 **Using crushable screening such as moorum gravel for Gr.II** 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, crushable screening 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	1,932.00
	(B) By Mechanical Means	cum	1,805.00

Item No.	Descriptions	Unit	Rate
	3) WBM Grading 3 **Using crushable screening such as moorum gravel for Gr.III** 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, crushable 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	2,015.00
	(B) By Mechanical Means	cum	1,857.00
4.9	**Wet Mix Macadam** Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the material with water at OMC in mechanical mixer (Pug Mill), carriage of mixed material by tipper to site, laying in uniform layers in sub-base/base course on a well prepared sub-base and compacting with smooth wheel roller of 80 to 100kN weight to achieve the desired density including lighting, barricading and maintenance of diversion, etc as per Tables 400.11 & 400.12 and Technical Specification Clause 406. By Mechanical Means with 1 km lead	cum	1,510.00
4.10	**Construction of Shoulders as per Technical Specification Clause 407.**		
	A Earthen Shoulders The rate as applicable for sub-grade construction may be adopted.		
	B Hard Shoulders Rate as applicable for sub-base and/or base may be adopted as per approved design.		
	C Paved Shoulders The rates may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.		

Item No.	Descriptions	Unit	Rate
4.11	Granular sub-base/base/surface course with local materials (Table 400.13) by mix in place method normal Construction of granular sub-base by providing local material spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at once and compacting with smooth wheel roller to achieve the desired density complete as per Clause 401.4 as per Technical Specification Clause 408.		
	i) Using naturally occuring gravel	cum	702.00
	ii) Using Gravel mix soil using	cum	701.00
4.12	**Construction of Water Bound Macadam using locally available material (Table 400.13)** Providing, laying spreading and compacting local material in block or large discrete particles, such as kankar, Laterite, Dhandla etc. as per Table 400.13 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 requisite type of screening / binding materials to fill-up the interstices of laid material watering and compacting to the required density as per Clause 405.3 and Technical Specification Cluase 408.	cum	747.00
4.13	**Lime-Flyash Stablised Soil Sub-base** Construction of sub-base using lime-flyash admixture with granular soil, free from organic matter/deleterious material or clayey silts and low plasticity clays having PI between 5 and 20 and liquid limit less than 25 and commercial dry lime, slaked at site or pre-slaked with CaO content not less than 50 per cent, flyash to conform to gradation as per Clause 4.3 of IRC:SP:20, lime+flyash content ranging between 10 to 30 per cent, the minimum un-confined compressive strength and CBR value after 28-days curing and 4-days soaking to be 0.75 MPa and 25 per cent respectively, all as specified in IRC:88 including a lead upto 1000 m as per Technical Specification Cluase 409.		
	(A) For earth taken from Private source	cum	522.00
	(B) For earth taken from Govt.Land	cum	522.00
4.14	**Construction of Sub-base/Course Using Crushed Slag as per Table 400.19** Construction of Sub-base by providing crushed slag spreading in uniform layer with motor grader on prepared surface mixing by mix-in-place method with Rotavator @ OMC, and compacting	cum	883.00

Item No.	Descriptions	Unit	Rate
	with three wheel 80-100 kN static roller to achieve the desired density complete as per Technical Specifications Cluase 402.4 and 410.3.2		
4.15	**Water Bound Macadam using crushed slag** Providing, laying, spreading and compacting crushed slag 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 requisite type of screening/binding materials to fill up the interstees of crushed slag watering and compacting to the required density as per Clause 405.3 and Technical Specification Cluase 410.3.2.	cum	832.00
4.16	**Cement Bound Granular Material sub-base/base** Providing laying and spreading granulated blast furnace slag on a prepared sub-grade pulverising adding the designed quantitity of cement to the spread granulated blast furnace slag mixing in place with rotavator grading with the mortar grader and compacting with smooth wheel roller 80-100 kN at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base as per Technical Specification Clauses 404.3 and 410.4.2.	cum	825.00
4.17	**Crusher Run Macadam Base** Providing, laying, spreading and compact crushed slag to Water Bound Macadam specification including spreading in uniform thicknessm hand packing rolling with smooth wheel roller 8-100kN in stages to proper grade and camber, applying and brooming requisite type of screening/binding materials to fill up the interstees of crushed slag watering and compacting to the required density as per Clause 405.3 and Tecahnical Specification Clause 410.3.2		
	A) By mix-in-place method		
	i) With 53 mm maximum size of aggregates	cum	1,555.00
	ii) With 37.5 mm maximum size of aggregates	cum	1,522.00
	(B) By mixing plant method		
	i) With 53 mm maximum size of aggregates	cum	1,736.00
	ii) With 37.5 mm maximum size of aggregates	cum	1,587.00

Item No.	Descriptions	Unit	Rate
4.18	**Brick Soling** Laying brick soling layer on prepared sub-grade with brick on end edging according to lines, graded and cross-section shown on the drawing filling joints with sand and earth, spreading 25 mm thick layer of earth over brick soling, watering and rolliing the same with three wheel road roller 80-100 kN as per Technical Specification Clause 412	sqm	578.00
4.19	**Stone Set Pavement** Providing and laying stone set pavement on prepared surface with sub-base 100 mm thick compacted Granular Sub-base as per Clause 401.4 and base 75 mm thick compacted water bound macadam grading 2 as per Clause 405.3. The 150 mm thick hammer desired stones are laid in the herring one or stretched bond pattern. The stones are compacted into the bedding sand of 40 mm over the WBM base bounded by edge stone using suitable compacting device. The gaps are filled with fine sand stone dust as per Technical Specification Clause 413.4	sqm	789.00

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.

Chapter 5
BASES AND SURFACE COURSES (BITUMINOUS)

Item No.	Descriptions	Unit	Rate
5.1	**Prime Coat**		
	i) Low porosity Providing and applying primer coat with bitumen emulsion (CSS-1) on prepared surface of granular base /WBM/WMM 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	sqm	41.00
	ii) Medium porosity Providing and applying primer coat with Bitumen emulsion (CSS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.90- 1.2 kg/ sqm using mechanical means as per Technical Specification Clause 502.	sqm	50.00
	iii) High porosity Providing and applying primer coat with Bitumen emulsion (CSS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 1.2-1.5 kg/sqm using mechanical means as per Technical Specification Clause 502.	sqm	65.00
5.2	**Tack Coat**		
	I) Providing and applying tack coat with Bitumen emulsion (CRS-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	11.00
	ii) Providing and applying tack coat with Bitumen emulsion (CRS-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	13.00
	iii) Providing and applying tack coat with Bitumen emulsion (CRS-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	13.00
	iv) Providing and applying tack coat with Bitumen emulsion (CRS-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	15.00

Item No.	Descriptions	Unit	Rate
5.3	**Bituminous Macadam**		
	(i) Providing and laying bituminous macadam with hot mix plant using crushed aggregates of grading as per Table 500.4 premixed with bituminous binder, transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction (Using smooth wheeled roller 80-100 kN and vibratory roller of 80-100kN) as per Technical Specification Clause 504.	cum	6,488.00
	(ii) Providing and laying Cold Mix bituminous macadam only by credible technology partners duly licensed by CRRI with Drum mix plant using crushed aggregates of grading as per Table 500.4 premixed with Cold mix binder, transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction as per Te chnical Specification (IRC:SP:100-2014)	cum	5,176.00
5.4	**Built-Up Spray Grout**		
	Providing, laying and rolling of built-up spray grout layer over prepared base consisting of a two layer composite construction of crushed coarse aggregates using motor grader for aggregates. Key stone chips spreader may be used with application of bituminous binder after each layer, and with key aggregates placed on top of the second layer to serve as a base, conforming to the line, grades and cross-section specified, the compacted layer thickness being 75 mm as per Technical Specification Clause 505.		
	A. By Manual Means		
	i) Bitumen (S-90)	sqm	288.00
	ii) Bitumen (S-65)	sqm	292.00
	B. By Mechanical Means	sqm	262.00
5.5	**Modified Penetration Macadam**		
	Construction of penetration macadam over prepared base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a three wheel 80-100 kN static roller to achieve the desired degree of compaction as per Technical Specification Clause 506.		
	A. 50 mm thick		
	i) Bitumen (S-90)	sqm	184.00
	B. 75 mm thick		
	i) Bitumen (S-90)	sqm	231.00
	ii) Bitumen (S-65)	sqm	234.00
5.6	**Surface Dressing using Bituminous (Penetrations grade / modified bitumen) Binder**		
	Providing and laying surface dressing as wearing course consisting of a layer of bituminous binder laid on the prepared surface, followed by a cover of crushed stone aggregates of specified size and rolling with three wheel 80-100 kN static roller including cleaning the road surface as per Technical Specification Clause 507.		

Item No.	Descriptions	Unit	Rate
	A. **By Manual Means**		
	Case – I: Nominal chipping size 13.2 mm		
	(i) Bitumen (S-90)	sqm	78.00
	ii) Bitumen (S-65)	sqm	79.00
	iii) Polymer Modified Bitumen	sqm	97.00
	iv) Crumb Rubber Modified Bitumen	sqm	82.00
	Case – II: Nominal chipping size 9.5 mm		
	i) Bitumen (S-90)	sqm	69.00
	ii) Bitumen (S-65)	sqm	70.00
	iii) Polymer Modified Bitumen	sqm	85.00
	iv) Crumb Rubber Modified Bitumen	sqm	72.00
	B. **By Mechanical Means**		
	Case – I: Nominal chipping size 13.2 mm		
	i) Bitumen (S-90)	sqm	72.00
	ii) Bitumen (S-65)	sqm	69.00
	iii) Polymer Modified Bitumen	sqm	87.00
	iv) Crumb Rubber Modified Bitumen	sqm	72.00
	Case – II: Nominal chipping size 9.5 mm		
	i) Bitumen (S-90)	sqm	60.00
	ii) Bitumen (S-65)	sqm	61.00
	iii) Polymer Modified Bitumen	sqm	77.00
	iv) Crumb Rubber Modified Bitumen	sqm	63.00
5.7	**Surface Dressing using Bitumen Emulsion** Providing and laying surface dressing as wearing course consisting of a layer of bitumen emulsion laid on the prepared surface, followed by a cover of crushed stone chippings of specified size and rolling with 80-100 kN roller including cleaning the road surface as per Technical Specification Clause 507.		
	A **By Manual Means**		
	Case – I: Nominal aggregate size 13.2 mm	sqm	97.00
	Case – II: Nominal chipping size 9.5 mm	sqm	88.00
	B **By Mechanical Means**		
	Case – I: Nominal chipping size 13.2 mm	sqm	87.00
	Case – II: Nominal chipping size 9.5 mm	sqm	79.00
5.8	**Pre-coating Chips** Pre-coating of chips with 1 per cent of paving bitumen by weight of chips in a suitable mixer duly heated to 160 degree C as per Technical Specification Clause 507.2.5		
	i) Bitumen (S-90)	cum	1,290.00
	ii) Bitumen (S-65)	cum	1,308.00

Item No.	Descriptions	Unit	Rate
5.9	**20mm thick Open-Graded Premix Carpet using Bituminous (penetration grade/modified bitumen) Binder** Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.		
	Case - I By Manual Means		
	i) Bitumen (S-90)	sqm	134.00
	ii) Bitumen (S-65)	sqm	140.00
	iii) Polymer Modified Bitumen	sqm	165.00
	iv) Crumb Rubber Modified Bitumen	sqm	143.00
	Case - II By Mechanical Means		
	i) Bitumen (S-90)	sqm	128.00
	ii) Bitumen (S-65)	sqm	129.00
	iii) Polymer Modified Bitumen	sqm	155.00
	iv) Crumb Rubber Modified Bitumen	sqm	133.00
5.10	**20 mm thick Open Graded Premix Carpet using Bitumen Emulsion as per Technical Specification Clause 508.2** 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 508.2	sqm	141.00
	(ii) Using Cold mix Binder (Tailor made as per IRC:SP:100-2014) and by credible technology partners duly licensed by CRRI.	sqm	161.00
5.11	**Mix Seal Surfacing** Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm (Type-A) or 13.2 mm to 0.9 mm (Type-B) aggregates using penetration grade bitumen 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 8-10 kN static roller and finishing to required level and grades as per Technical Specification Clause 509		

Item No.	Descriptions	Unit	Rate
	By Manual Means		
	Type A		
	i) Bitumen (S-90)	sqm	184.00
	ii) Bitumen (S-65)	sqm	187.00
	iii) Polymer Modified Bitumen	sqm	225.00
	iv) Crumb Rubber Modified Bitumen	sqm	192.00
	v) Using Cold mix Binder (Tailor made as per IRC:SP:100-2014) All in 1 and by credible technology partners duly licensed by CRRI	sqm	217.00
	Type B		
	i) Bitumen (S-90)	sqm	170.00
	ii) Bitumen (S-65)	sqm	172.00
	iii) Polymer Modified Bitumen	sqm	206.00
	iv) Crumb Rubber Modified Bitumen	sqm	177.00
	v) Using Cold mix Binder (Tailor made as per IRC:SP:100-2014) All in 1 by credible technology partners duly licensed by CRRI	sqm	205.00
	By Mechanical Means		
	Type A		
	i) Bitumen (S-90)	sqm	159.00
	ii) Bitumen (S-65)	sqm	161.00
	iii) Polymer Modified Bitumen	sqm	200.00
	iv) Crumb Rubber Modified Bitumen	sqm	167.00
	Type B		
	I) Bitumen (S-90)	sqm	145.00
	ii) Bitumen (S-65)	sqm	147.00
	iii) Polymer Modified Bitumen	sqm	181.00
	iv) Crumb Rubber Modified Bitumen	sqm	152.00
5.12	**Seal Coat** Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A, Type B and Type C as per Technical Specification Clause 510		
	A **By Manual Means**		
	Case - I : Type A (11.2mm to 2.36mm)		
	i) Bitumen (S-90)	sqm	67.00
	ii) Bitumen (S-65)	sqm	68.00
	iii) Polymer Modified Bitumen	sqm	85.00
	iv) Crumb Rubber Modified Bitumen	sqm	70.00
	Case - II : Type B (2.36 mm to 180 micron)		
	i) Bitumen (S-90)	sqm	46.00

Item No.	Descriptions	Unit	Rate
	ii) Bitumen (S-65)	sqm	44.00
	iii) Polymer Modified Bitumen	sqm	59.00
	iv) Crumb Rubber Modified Bitumen	sqm	53.00
	Case - III : Type C		
	i) Bitumen (S-90)	sqm	50.00
	ii) Bitumen (S-65)	sqm	51.00
	iii) Polymer Modified Bitumen	sqm	62.00
	iv) Crumb Rubber Modified Bitumen	sqm	52.00
	B. **By Mechanical Means**		
	Case - I : Type A		
	i) Bitumen (S-90)	sqm	65.00
	ii) Bitumen (S-65)	sqm	67.00
	iii) Polymer Modified Bitumen	sqm	84.00
	iv) Crumb Rubber Modified Bitumen	sqm	69.00
	Case - II : Type B		
	i) Bitumen (S-90)	sqm	43.00
	ii) Bitumen (S-65)	sqm	44.00
	iii) Polymer Modified Bitumen	sqm	56.00
	iv) Crumb Rubber Modified Bitumen	sqm	49.00
	Case - III : Type C		
	i) Bitumen (S-90)	sqm	49.00
	ii) Bitumen (S-65)	sqm	50.00
	iii) Polymer Modified Bitumen	sqm	61.00
	iv) Crumb Rubber Modified Bitumen	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 are at site. 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. The rates of earthwork, subgrade and sub-base may be adopted from Chapters 3 and 4 as appropriate.
5. **A Carriage cost of 50Km has been provided in the analysis for the items Interlocking Concrete Block pavement and Edge Block.**

Chapter 6
CEMENT CONCRETE PAVEMENT

Item No.	Descriptions	Unit	Rate
6.1	Granual Sub-base		
	Rate as per item No.4.1 of Chapter 4		
6.2	Lime Treated Soil		
	Rate as per item No.4.5 of Chapter 4		
6.3	Water Bound Macadam (WBM) - Sub-base		
	(A) By Manual Means		
	As per item No.4.7 of Chapter 4		
	(B) By Mechnical Means		
	As per item No.4.7 of Chapter 4		
6.4	**Cement concrete pavement** Construction of un reinforced, dowel jointed at expansion and construction joint only,plain cement concrete pavement, thickness as per design,over a prepared sub base,with 43 grade cement or any other type as per clause 1501.2.2 M30 grade ,coarse and fine aggregrette conforming to is:383,maximum size of coarse aggregate not exceeding 25 mm,mixed in a concrete mixer of not less than 0.2 cum capacity and appropriate weigh batcher using approved mix design, laid in approved fixed side formwork (steel channel,laying and fixing of 125 micron thick polythene film,wedges,steel plates including levelling the formwork as per drawing) spreading the concrete with shovels,rakes,compacted using needle,screed and plate vibrator and finished in continuous operation including provision of contraction and expansion,construction joints,applying debonding strips,primer,sealant,dowelbars,near approaches to bridge/culverts and construction joints,admixture as approved,curingof concrete slabs for 14 days.	cum	6,888.00
6.5	**Roller Compacted Concrete Pavement** Construction of Roller Compacted Concrete Pavement (RCCP) with coarse and fine aggregates conforming to IS:383, the size of coarse aggregate not exceeding 25 mm with minimum aggregate cement ratio of 5:1 mm and with minimum cemnt content of 310 kg per cum, aggregate gradation to be as per Table 602.2 after blending, mixing in concrete mixer at optimum moisture content, transporting to site, laying with wheel barrows	cum	5,974.00

Item No.	Descriptions	Unit	Rate
	or steel pans or with mechanical paver, compacting with 80-100 kN smooth wheel, tandem vibratory roller, to achieve, the designed flexural strength, finishing and curing as per drawings and Technical Specification Clause 1502 **Note:** Carriage of c c block to site of is payable seperately as per Chapter of carriage of material from manufacturing site to the site of work.		
6.6	**Rectangular Concrete Block Pavement** Manufacturing, laying of cement concrete blocks of size 0.450 m x 0.300 m x 0.15 m of Cement Concrete (C.C.) M30 garde and spreading 25 mm thick sand under neath and filling joints with sand on existing W.B.M. base as per Technical Specification Clause 1503. **Note:** Carraige of c.c block to site of is payable seperately as per chapter of carriage of materials from manufacturing site to the site of work	sqm	1,462.00
6.7(A)	**Inter locking concrete Block pavement**		
	i) a) Providing and laying interlocking concrete block pavement (M40) having thickness 80mm as per technical specification clause 1504 (inclusive of Edge restraint and carriage)	sqm	959.00
	b) Providing and laying interlocking concrete block pavement (M40) having thickness 80mm as per echnical specification clause 1504 including carriage (Excluding Edge restraint)	sqm	754.00
	i) a) Providing and laying interlocking concrete block pavement (M40) having thickness 60mm as per technical specification clause 1504 (inclusive of Edge restraint and carriage)	sqm	771.00
	b) Providing and laying interlocking concrete block pavement (M40) having thickness 60mm as per echnical specification clause 1504	sqm	565.00
	b) Providing and laying Edge block/Edge restraints 300mm x 300mm x 150mm of (c.c) M40 Grade including carriage as per Technical specification clause 1504.	sqm	135.00
	i. The rates for sub-grade, sub-base course can be taken from Chapters 3 and 4.		

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-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).

Chapter 7
CAUSEWAY AND SUBMERSIBLE BRIDGES

Item No.	Descriptions	Unit	Rate
7.1	Construction of Cut-off Walls/Head Walls		
	i) Earthwork in excavation for structures as per drawing and technical specification Clause 305.		
	Rate as per item No.11.1 of Chapter 11	cum	
	ii) Plain cement concrete M15 grade		
	Rate as per item No.11.4 (ii) of Chapter 11	cum	
	iii) Brick masonry in cement mortar 1:4		
	Rate as per item No.11.5 (ii) of Chapter 11	cum	
	iv) Stone masonry in cement mortar 1:4		
	Rate as per item No.11.6 (ii) of Chapter 11	cum	
	v) Providing P.C.C M20 architectural coping on top of wall		
	Rate as per item No.12.13 of Chapter 12	m	
7.2	Preparation of Subgrade Rate as per item No.3.15 of Chapter 3	cum	
7.3	Granular Sub-base Rate as per item No.4.1 of Chapter 4	cum	
7.4	W.B.M. Base Course Rate as per item No.4.7 of Chapter 4	cum	
7.5	Cement Concrete Slab Rate as per item No.6.4 of Chapter 6	cum	
7.6	**Providing and Laying Apron with Stone Boulders as per Drawings & Technical Specification Clause 1301** Rate as per item No.14.1 of Chapter 14	cum	
	ii) Providing and Laying of Boulder Apron Laid in Wire Crates as per Drawing and Technnical Specification Clause 1301 Rate as per item No.14.2 of Chapter 14	cum	
	iii) Providing and Laying of Apron with Cement Concrete Blocks as per Drawing and Technical Specification Clause 1301 Rate as per item No.14.3 of Chapter 14	cum	
7.7	**Guide Posts** Construction of R.C.C. guide posts of 250 mm dia, M25 grade as per drawing and technical specification Clause 1401.6 Rate as per item No.8.8 of Chapter 8	cum	
7.8	**Bedding for Causeway** i) Type A (concrete cradle) Bedding Clause 1402.5 As per item No.9.2 of Chapter 9	cum	

Item No.	Descriptions	Unit	Rate
	ii) Type B (first class) Bedding Clause 1402.5 As per item No.9.2 of Chapter 9	cum	
7.9	**Laying Reinforced Cement Concrete Pipe NP3 as per drawing and technical specification Clause 1402.6** As per item No.9.3 of Chapter 9	m	
7.10	Laying Reinforced Cement Concrete Pipe NP4 as per technical specification Clause 1402.6 As per item No.9.4 of Chapter 9	m	

Chapter – 8
HILL ROADS

Preamble:

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

2 Extra Provision for High Altitude Areas

Since there is no place at an altitude of 2100 m and above in Assam extra provision for man power as well as machines are not considered.

Chapter 8
HILL ROADS

Item No.	Descriptions	Unit	Rate
8.1	Site Clearance		
8.2	Setting Out		
	1) Construction of reference pillars as per Fig. 1600.1(b) as per drawing and Technical Specification Clause 1602.1	per Km	5,042.00
	2) Construction of back piller as per Fig. 1600.1(c) as per drawing and Technical Specification Clause 1602.3	per Km	11,723.00
	3) Construction of Job pillers as per Fig. 1600.1 (d) and Technical Specification Clause 1602.4	each	482.00
8.3	**Earthwork 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 (Manual means should be use where machines can not be deployed due to site condition)	cum	105.00
	B) Extra for Every Additional Lift of 1.5 m or Part thereof	cum	11.00
	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	84.00
	B) Extra for Every Additional Lift of 1.5 m or Part thereof	cum	11.00
	iii) Excavation in Hilly Area in Ordinary Rock by manual means		
	A) Excavation in ordinary rock using manual means including loading in a truck and carrying of excavated material to embankment site with a lift upto 1.5 m and lead upto 20 m as per Clause 1603.2. (Manual means should be use where machines can not be deployed due to site condition)	cum	231.00
	B) Extra for Every Additional Lift of 1.5 m or Part thereof	cum	17.00
	iv) Excavation in Hilly Areas in Ordinary Rock by mechanical means not requiring blasting		

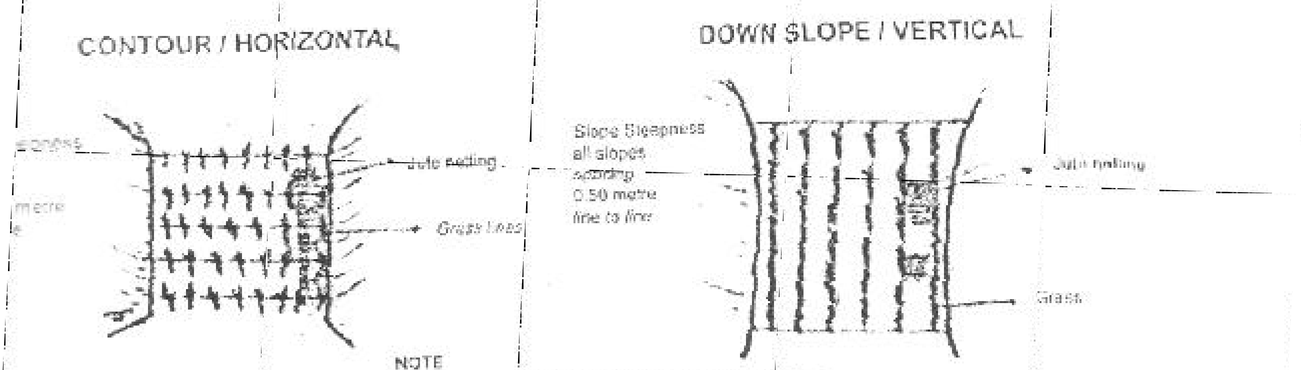
Item No.	Descriptions	Unit	Rate
	A) Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with a lift upto 1.5 m and lead upto 20 m as per Clause 1603.2.	cum	128.00
	v) Excavation in Hilly Areas in Hard Rock requiring blasting		
	A) Excavation in hilly areas in hard rock requiring blasting, by mechanical means, lift upto 1.5 m and disposal of excavated rock upto a lead of 20 m as per Clause 1603.2.	cum	261.00
	B) Extra for Every Additional Lift of 1.5 m or Part thereof	cum	22.00
	vi) Excavation in Hard Rock (blasting prohibited) Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal with a lift upto 1.5 m and lead upto 200 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross- sections as per Technical Specification Clause 302.3.5		
	a) Manual Means	cum	538.00
	b) Mechanical Means	cum	430.00
8.4	**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	
	ii) Plain cement concrete M 10 grade Rate as per item No.11.4 of Chapter 11	cum	
	iii) Stone masonry in cement mortar 1:5 Rate as per item No. 12.4 (III) (iii) of Chapter 12	cum	
	iv) Pointing with cement mortar 1:3 Rate as per item No.12.2 of Chapter 12	sqm	
	v) Providing P.C.C. M 20 architectural coping on top of retaining wall/breast wall Rate as per item No.12.13 of Chapter 12	m	
	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. 12.11 of Chapter 12	cum	
	vii) Back filling behind retaining wall/breast wall Rate as per item No. 12.10 of Chapter 12	cum	

Item No.	Descriptions	Unit	Rate
8.5	**Construction of Hill side Drain** Construction of Hill side drain in accordance with the requrement of specification true to lines and grades. Dimensions and other particulars as per drawing and technical specification. Clause 1606.1		
	i) Earthwork in excavation for structures as per drawing and technical specification. Rate as per item no 11.1 of chapter 11	cum	
	ii) Plain cement concrete M10 grade Rate as per item no 11.4of chapter 11	cum	
	iii) Stone masonary in cement morter 1:5 Rate as per item no 12.4(iii) (iii) of chapter 12	cum	
	(iv) Plain cement concrete M15 grade Rate as per item 11.4 of chapter 11	cum	
	(v) Cement plaster 15 mm thick 1:4 on stone masonary Rate as per item no 12.3 of chapter 12	cum	
	(vi) Providing P.C.C. M 20 Architectural coping on top of wall Rate as per item no.12.13 of chapter 12 Rate per m length (I+II+III+IV+V+VI)	cum m	
	Note: 1. Quantities of material/work shall be as per Design and Drawing. 2.Earth work in excavation may be taken as per site conditions. It may coprise of a number of sub-items depending upon the type of soil/rock.		
8.6	**Construction of catch water/Intercepting drain.** Construction of catch water/Intercepting drain in Random ruble masonary in 1:5 cement morter true to the specified lines grades lavel and dimensions as per the requirements of the specification Clause 1606.2		
	Unit=1M		
	i) Earthwork in excavation for structure as per drawing and technical specificatuion Rate as per item no 11.2 of chapter 11	cum	

Item No.	Descriptions	Unit	Rate
	ii) Plain cement concrete M10 grade Rate as per 11.4 of chapter 11.	cum	
	iii) Stone masonary in cement morter 1:5 Rateas per item no 12.4 (III) (iii) of chapter 12	cum	
	iv) Plain cement cioncrete M 15 grade Rate as per 11.4 of chapter 11.	cum	
	v) Cement plaster 15 mm thick 1:4 on stone masonary Rate as per 12.3 of chapter 12.	sqm	
	vi) Providing P.C.C. M20 architectural coping on top of wall Rate as per item No. 12.3 of chapter 12	cum	
	Note: 1. Quantities of material/work shall beas per design and drawings. 2. Earth work in excavation may be taken as per site condition.It may comprise of a number of sub-items depending upon the type of soil/rock encountered.		
8.7	**Construction of Scupper** Construction of scupper with dry stone masonry as per drawing and technical specifications as per Clause 1606.5.	Running m	19,204.00
8.8	Construction of RCC guide posts of 250 mm dia M15 grade cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC posts not to exceed 1 in 500 as per drawing and Technical Specification Clause 1608.2		
	i) Earth work in excavation for structures Rates as per item No. 11.1 of Chapter 11	cum	
	ii) RCC M15 grade Rate as per item No. 11.4 of Chapter 11	cum	
	iii) HYSD steel bars Rate as per item No. 12.6 of Chapter 12	t	
	iv) Painting two coats including prime coat on new concrete surface Rate as per item No.10.5 of Chapter 10	sqm	
8.9	**Providing edge stones on valley side of formation as per drawing and Technical Specification Clause 1608.2.6**	m	234.00

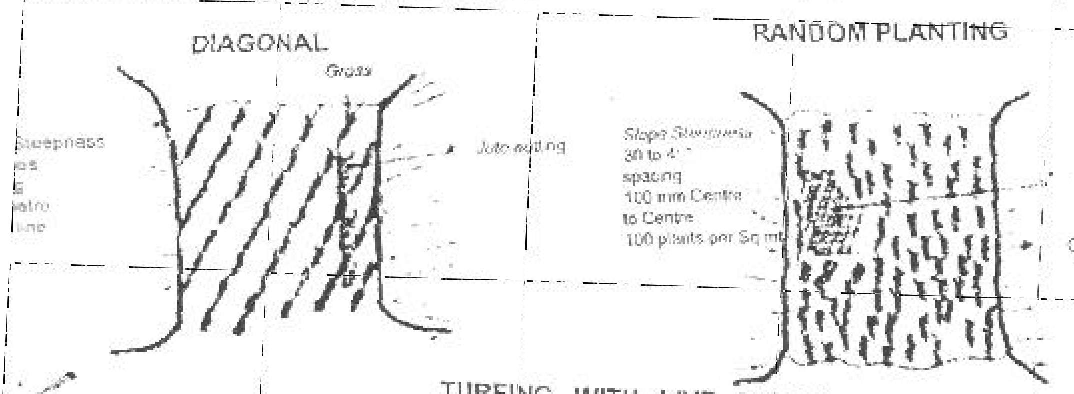
Item No.	Descriptions	Unit	Rate
8.10	**Turfing with Sods** Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the Engineer including preparation of ground, stacking the sods and watering as per Clause 309	sqm	18.00
8.11	**Seeding and Mulching** Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, multching material, applying bituminous emulsion at the rate of 0.23 l per sqm and laying and fixing jute netting, including watering for 3 months all as per Clause 310.	sqm	283.00

GRASSING

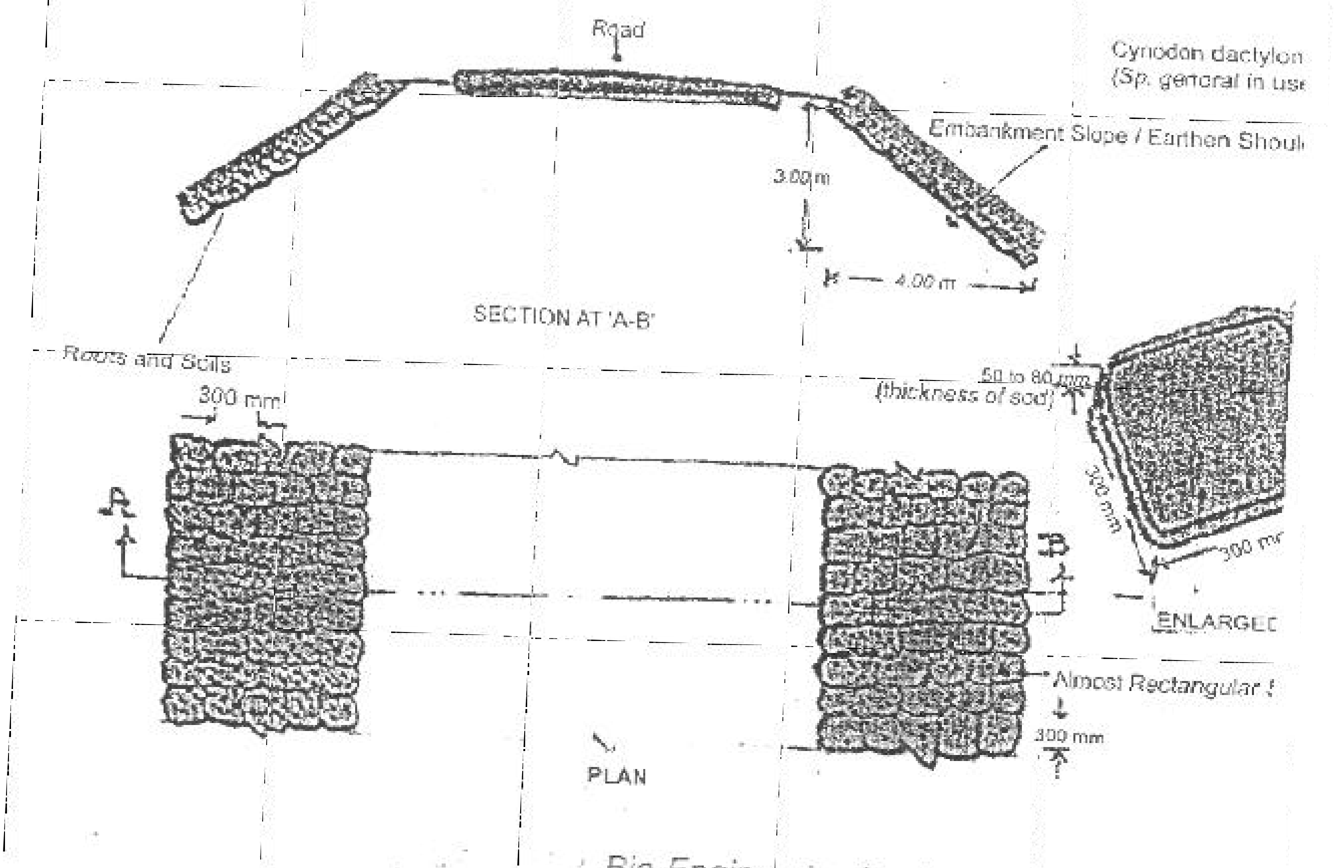


NOTE

Spacing slip to slip-10 cm. slips should be lopped off 10 cm. above ground level
Grass Spp.: Thysanolunea; Eulaliopsis; Sacharam, Vetivera; Pennisetum purpureum etc.



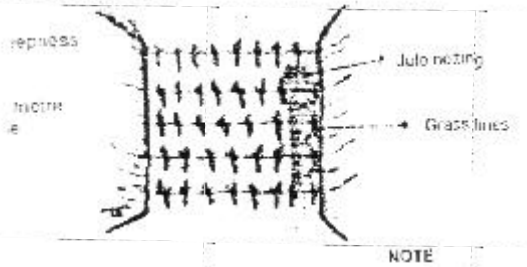
TURFING WITH LIVE PERENNIAL SODS



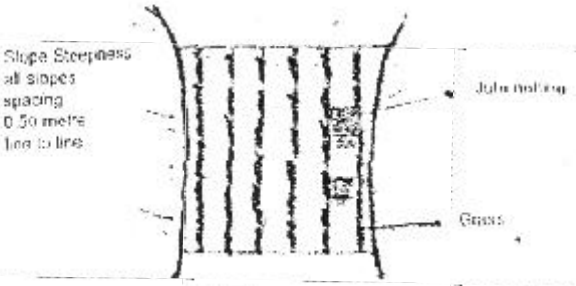
Bio-Engineering Technique

GRASSING

CONTOUR / HORIZONTAL



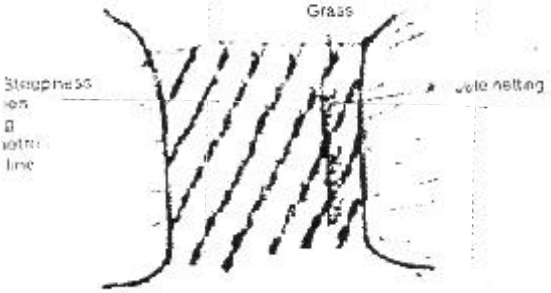
DOWN SLOPE / VERTICAL



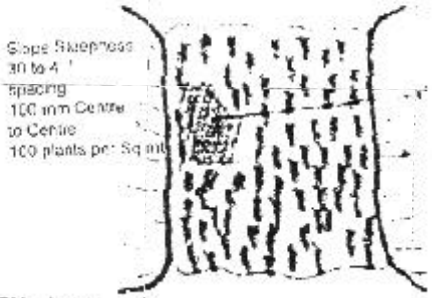
NOTE

Spacing slip to slip-10 cm. slips should be lopped off 10 cm. above ground level.
Grass Spp.: Thysanolaena; Eulaliopsis; Sacharum; Vetiveria; *Pennisetum purpureum* etc.,

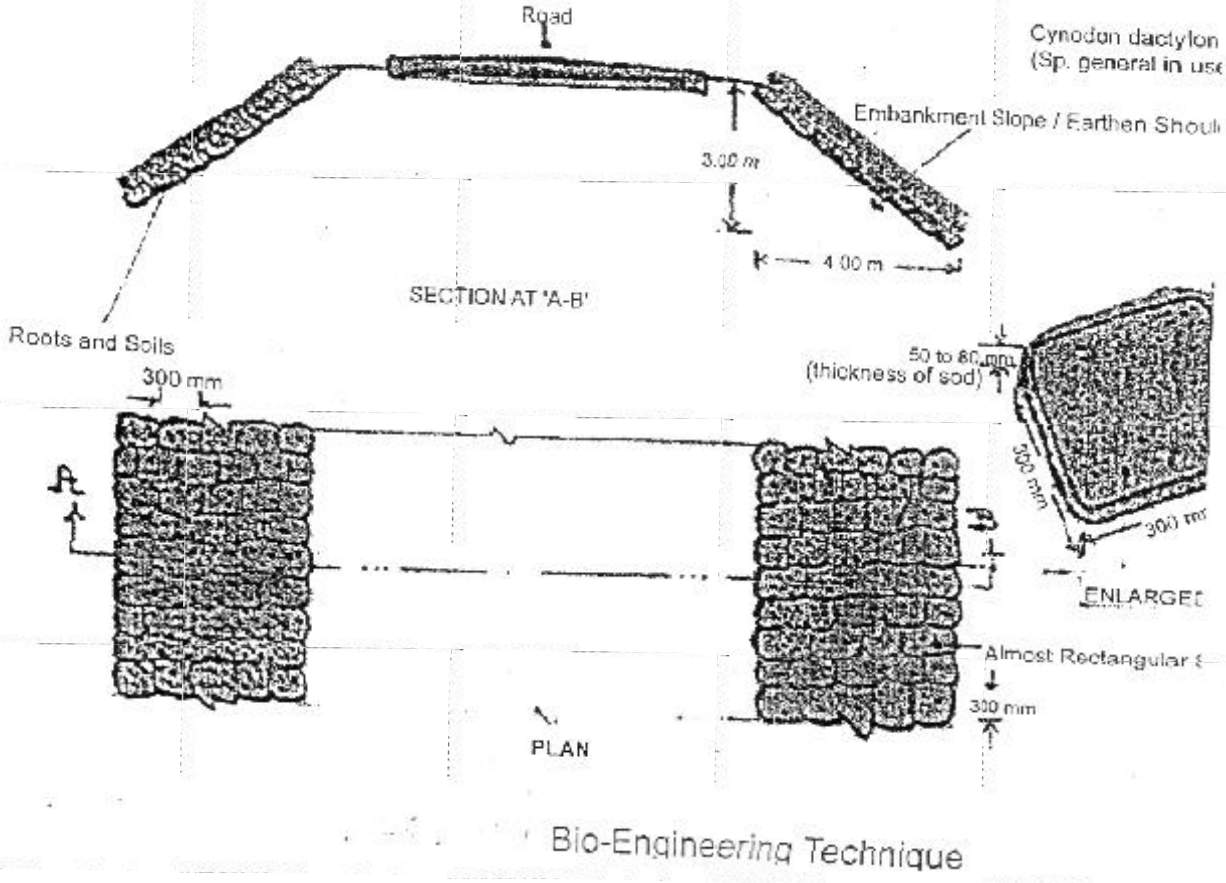
DIAGONAL



RANDOM PLANTING

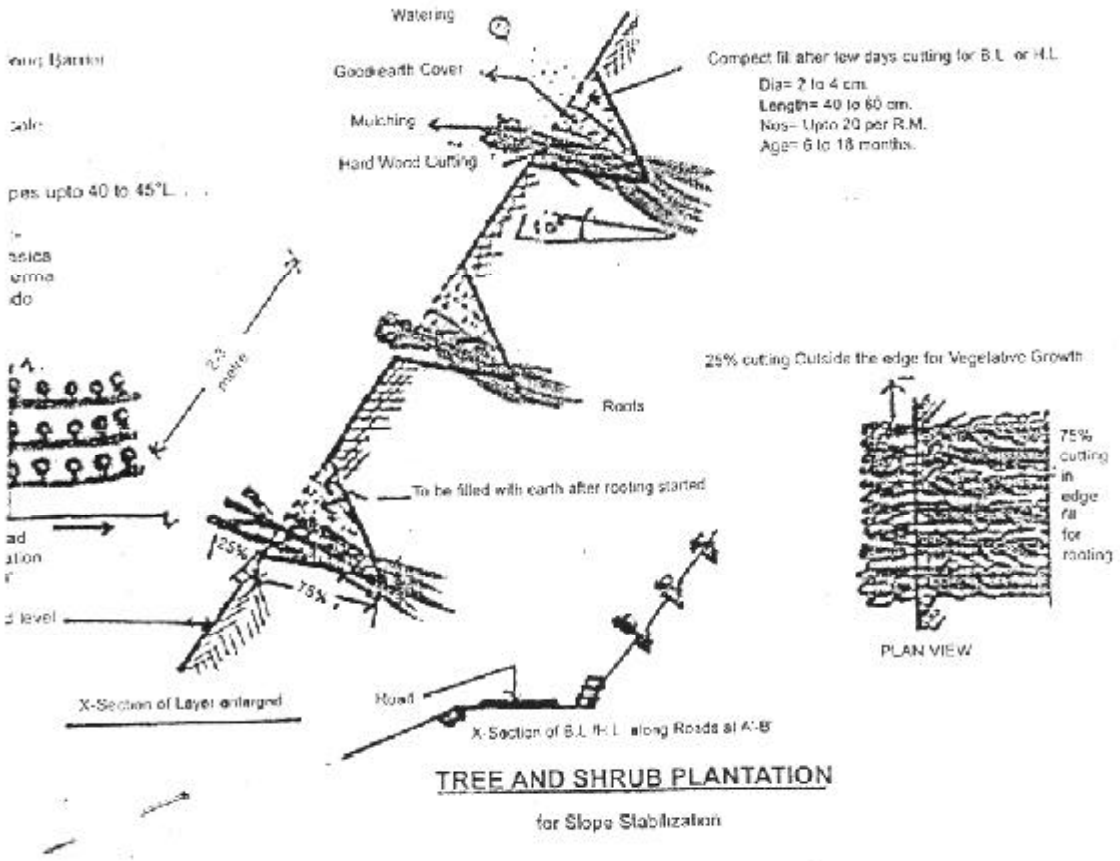


TURFING WITH LIVE PERENNIAL SODS



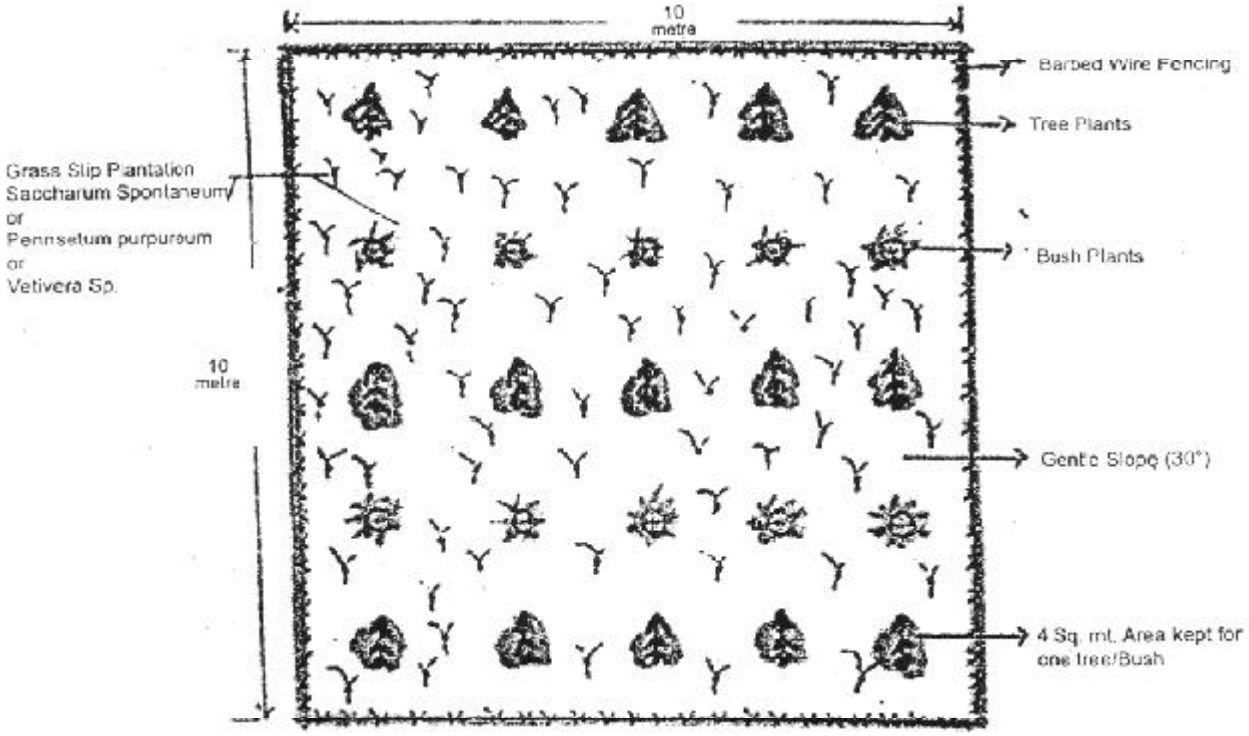
Bio-Engineering Technique

BRUSH LAYER / HEDGE LAYER



TREE AND SHRUB PLANTATION

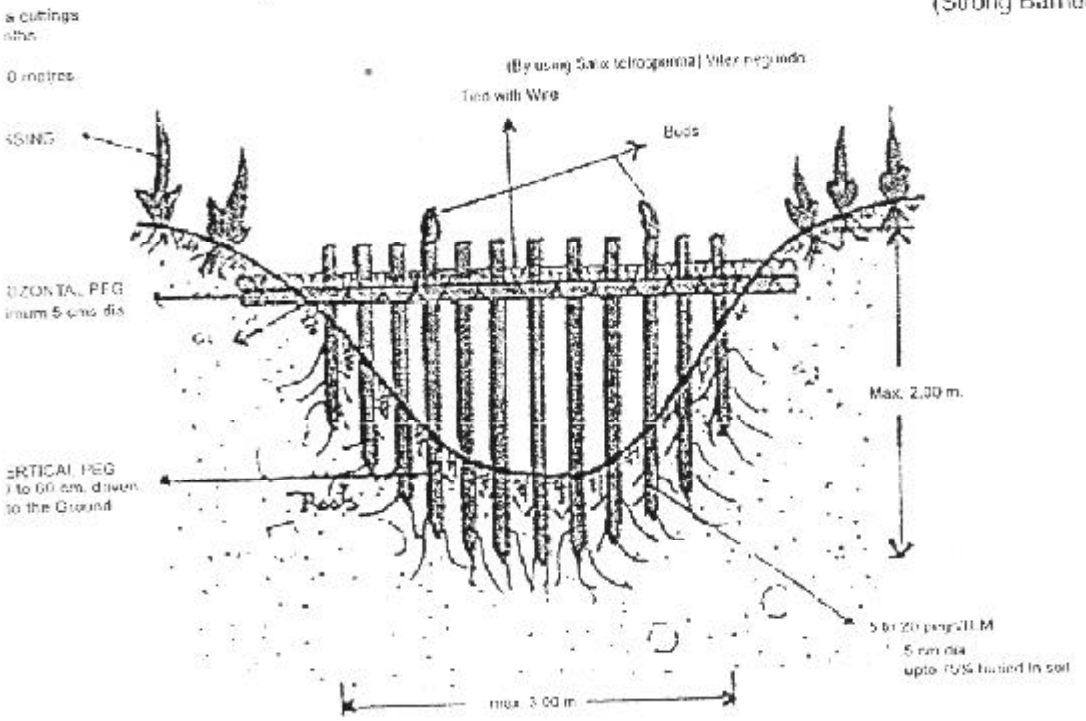
for Slope Stabilization



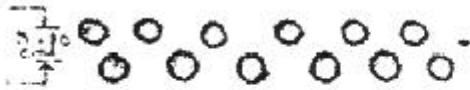
Bio-Engineering Technique

VEGETATIVE PALISADE IN RILLS (ELEVATION)

(Strong Barrier)



PALISADE (STAGGERED)



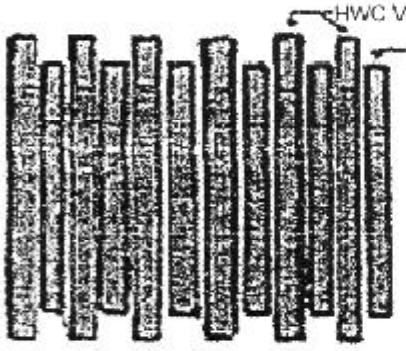
Holes should be large enough to insert cutting easily

PLAN OF STAGGERED HOLES

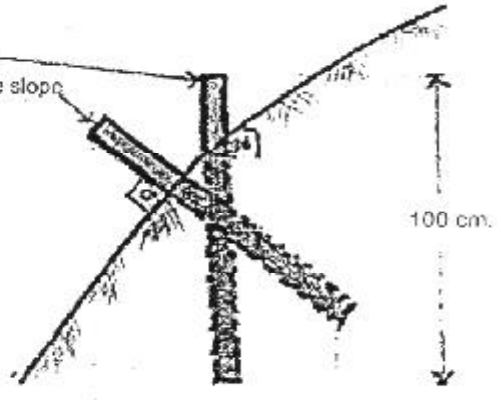
Note: (Spacing between two palisade 2 metre <30° slope 1 metre 30-60° slop

Staggering -distance as required

Plan showing staggered H.W.C. of Plants.



FRONT ELEVATION



CROSS SECTION

Chapter – 9
PIPE CULVERTS

Preamble:

1. Pipe culverts of sizes 750 mm, 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 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 of overall height of pipe in the analysis. This may be modified as per thickness indicated in the approved drawing.

Chapter 9
PIPE CULVERTS

Item No.	Descriptions	Unit	Rate
9.1	**Excavation for Structures** Earthwork in excavation for foundation of structures upto 3 m depth as per drawing and technical specification Clause 1104 includding setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.		
	Rate as per item No.11.1 of Chapter 11	cum	
9.2	**Bedding of pipe**		
	(i) Type A (Concrete Cradle) Bedding Laying concrete cradle bedding with M15 Grade Cement Concrete as per Clause 1105 (i)		
	Rate as per Item No.11.4 (II)(i) of Chapter 11	cum	5,286.00
	(ii) Type B (First Class) Bedding Laying (First Class) bedding on well compacted sand, moorum or approved granular material as per Clause 1105 (ii)		
	i) Sand, Moorum (Rate as per Item No.11.2 of Chapter 11)	cum	969.00
	ii) Granular Material	cum	1,134.00
9.3	**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.		
	1200 mm dia	m	9,480.00
	1000 mm dia	m	6,235.00
	600 mm dia	m	3,261.00
9.4	**Providing and Laying Reinforced Cement Concrete Pipe NP4 as per design in Single Row** Providing and laying reinforced cement concrete pipe NP4 for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding		

Item No.	Descriptions	Unit	Rate
	excavation, protection works, backfilling, concrete and masonry works in head walls and parapets Clause 1106.		
	1200 mm dia	m	11,436.00
9.5	**Providing and Laying Reinforced Cement Concrete Pipe NP3 as per Design in Double Row** Providing and laying reinforced cement concrete pipe NP3 for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets as per Clause 1106.		
	A) 1200 mm dia	m	19,002.00
	B) 1000 mm dia	m	13,976.00
9.6	**Providing and Laying Reinforced Cement Concrete Pipe NP4 as per Design in Double Row** Providing and laying reinforced cement concrete pipe NP4 for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets as per Clause 1106.		
	A) 1200 mm dia	m	22,913.00
	B) 1000 mm dia	m	18,839.00
9.7	**Plain Cement Concrete M10 (1:3:6 nominal mix) in levelling course below open foundation of Head walls as per drawings & Technical Specification Clause 1109**		
	Rate as per item No.11.4 of Chapter 11	cum	
9.8	**Brick Masonry Work in cement mortar in foundation of Head walls complete exculding pointing and plastering as per drawing and technical specification Clause 1109**		
	A Brick Masonry in 1:4 cement mortar Rate as per item No.11.5 (ii) Chapter 11	cum	
	B In cement-lime mortar (1:0.5:4.5) Rate as per item No.11.5 (iii) Chapter 11	cum	
9.9	**Stone Masonry Work in cement mortar in foundation of Head walls complete as per drawing and technical specification Clasue 1109**		
	A In 1:4 cement mortar Rate as per item No.11.6 (II) (ii) Chapter 11	cum	

Item No.	Descriptions	Unit	Rate
	B In cement-lime mortar (1:0.5:4.5) Rate as per item No.11.6 (II) (iii) Chapter 11	cum	
9.10	Pointing with Cement Mortar (1:3) on brickwork as per technical specification Clause 613.3		
	Rate as per item No.12.2 of Chapter 12	sqm	
9.11	Plastering with Cement Mortar (1:4), 15 mm thick on brickwork in substructure as per technical specification		
	Rate as per item No.12.3 of Chapter 12	sqm	
9.12	Backfilling in Foundation Trenches as per drawing and technical specification Clause 1108		
	Rate as per Item No.11.2 of Chapter 11	cum	
9.13	Providing PCC M20 Architectural Coping on the top of wing wall, return wall etc. complete as per drawing and technical specification Clause 615		
	Rate as per Item No.12.13 of Chapter 12	m	

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.

Chapter 10
TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES

Item No.	Descriptions	Unit	Rate
10.1	**Printing New Letters and Figures of any Shade** Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade as per drawings and Technical Specification Clause 1701		
	i) Hindi (Matras commas and the like not to be measured and paid for. Half letters shall be counted as half only)	per cm height per letter	0.49
	ii English and Roman	per cm height per letter	0.33
10.2	**Traffic Signs**		
	A Retro-reflectorised Traffic Signs		
	1. Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of encapsulated lens type reflective sheeting vide Clause 1701.2.3 fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per drawings and Technical Specification Clause 801	each	
	(I) 90 cm equilateral tringle	each	5,798.00
	(ii) 60 cm equilateral tringle	each	3,897.00
	(iii) 60 cm circular	each	5,167.00
	(iv) 80 cmx 60 cm rectangular	each	7,112.00
	(v) 60 cmx45 cm rectangular	each	5,039.00
	(vi) 60 cmx60 cm square	each	5,927.00
	(vii) 90 cm side octagon	each	9,007.00
	2. Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of encapsulated lens type reflective sheeting vide Clause 1701.2.3, fixed over aluminium sheeting, 1.5 mm thick supported on GI pipe 50 mm dia firmly fixed to the ground by means of properly designed foundation with M-15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per drawings and Technical Specification Clause 1701		

Item No.	Descriptions	Unit	Rate
	(i) 90 cm equilateral tringle	each	5,757.00
	(ii)60 cm equilateral tringle	each	3,730.00
	(iii)60 cm circular	each	5,057.00
	(iv)80 cmx 60 cm rectangular	each	7,116.00
	(v)60 cmx 45 cm rectangular	each	4,921.00
	(vi)60 cmx60 cm square	each	5,862.00
	(vii)90 cm side octagon	each	10,168.00
	3. Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of encapsulated lens type reflective sheeting vide Clause 1701.2.3, fixed over aluminium sheeting, 1.5 mm thick supported on RCC Post 100 mm x 100 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawing Clause 1701		
	(I) 90 cm equilateral tringle	each	5,271.00
	(ii) 60 cm equilateral tringle	each	3,308.00
	(iii) 60 cm circular	each	4,593.00
	(iv) 80 cmx 60 cm rectangular	each	6,587.00
	(v) 60 cmx 45 cm rectangular	each	4,462.00
	(vi) 60 cmx60 cm square	each	5,373.00
	(vii) 90 cm side octagon	each	8,530.00
	Please ensure that area of aluminium plate of required size is entered in the analysis item		
	(B) **Semi Reflective Traffic Signs** 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		
	(I) 90 cm equilateral tringle	each	3,860.00

Item No.	Descriptions	Unit	Rate
	(ii)60 cm equilateral tringle	each	2,482.00
	(iii)60 cm circular	each	3,384.00
	(iv)80 cmx 60 cm rectangular	each	4,783.00
	(v)60 cmx 45 cm rectangular	each	3,292.00
	(vi)60 cmx60 cm square	each	3,931.00
	(vii)90 cm side octagon	each	6,856.00
10.3	**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	12,865.00
	(ii) 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 2 inch dia GI Pipe 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 Tehnical Specification Clause 1701.	sqm	12,475.00
	(iii) 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 RCC Post 100 mm x 100 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	12,173.00
	B **Semi-Reflective Traffic signs** Direction and place i ndentification signs up to 0.9 sqm size board		

Item No.	Descriptions	Unit	Rate
	(i) Providing and erecting direction and place identifications of semi reflective sign boards as per IRC:67 made of 2 mm thick M.S. Sheet duly stove enameled paint in white colour in front and grey colour on back with red reflective border of 70 mm width and required message, letters, figures with reflective engineering grade tape as per MORD specifications of required shade and colour. Supported and welded on 47 mm x 47mm of 12 SWG Square tube of 3050 mm height duly strengthened by 25 mm x 5 mm M/s flat iron on edges on back firmly fixed to the ground by means of properly designed foundations with M-15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawing and Technical Specification Clause 1701	sqm	9,680.00
10.4	**Direction and Place Identification signs with size more than 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 exceeding 0.9 sqm supported on mild steel angle iron posts 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M-15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawing and Technical Specification Clause 1701	sqm	13,222.00
	(ii) 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 exceeding 0.9 sqm supported on dia GI Pipe firmly fixed to the ground by means of properly designed foundation with M-15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawing and Technical Specification Clause 1701	sqm	12,873.00
	(iii) 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 exceeding 0.9 sqm supported on RCC Posts 100 mm x 100 mm firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawing and Technical Specification Clause 1701	sqm	12,039.00

Item No.	Descriptions	Unit	Rate
	B **Semi-Reflective Traffic Signs**		
	Direction and place identification signs more than 0.90 sqm sign board Providing and erecting direction and place identification of semi reflective sign boards as per IRC-67 made of 2 mm thick M.S. Sheet duly stove enameled paint white colour in front and grey colour on back with reflective border of 70 mm width and required message, letters, figures with reflective tape of engineering grade as per MORD specifications of required shade and colour. Supported and welded on two nos. 47 mm x 47 mm of 12 SWG square tube of 3050 mm height duly strengthened by 25 mm x 5 mm MS flat iron on edges on back firmly fixed to the ground by means of properly designed foundations with M-15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawing and Technical Specification Clause 1701	sqm	9,596.00
10.5	**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	46.00
10.6	**Painting on Steel Surfaces** Providing and applying two coats of ready mix paint including primer coat of approved brand on steel surface after through cleaning of surface to give an even shade as per drawing and Technical Specification Clause 1701	sqm	52.00
10.7	**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	87.00
10.8	**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

Item No.	Descriptions	Unit	Rate
10.9	**Painting lines, Dashes, Arrows, etc. on Roads in Two Coats on Old Work** Painting lines, dashes, arrows, etc. on roads in two coats on old work with ready mixed road marking paint conforming to IS:164 on bituminous/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	42.00
10.10	**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	3,371.00
	ii) Ordinary Kilometer Stone (Precast)	each	2,058.00
	iii) 200 m stone (precast)	each	546.00
10.11	**Boundary Pillar** Reinforced cement concrete M15 grade boundary pillars/local stone of standard design as per IRC:25, fixed in position including finishing and lettering but excluding painting as per drawing and Technical Specification Clause 1704	each	505.00
10.12	**G.I Barbed Wire Fencing 1.2 m high** Providing and fixing 1.2 m high GI barbed wire fencing with 1.8 m RCC posts 150 mm x 150 mm placed every 3 m centre-to-centre founded in M15 grade cement concrete, 0.6 m below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 9 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc. complete as per Clause 1705.	Running m	250.00
10.13	**G.I Barbed Wire Fencing 1.8 m high** Providing and fixing 1.8 m high GI barbed wire fencing with 2.4 m RCC M15 grade 150 mm x 150 mm concrete post placed every 3 m centre-to-centre founded in M15 grade cement concrete, 0.6 m below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc. complete as per Clause 1705.	Running m	418.00

Item No.	Descriptions	Unit	Rate
10.14	**Tubular Steel Railing on Medium Weight Steel Channel (ISMC series) 100 mm x 50 mm** Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 m high above ground, 2 m centre-to-centre, complete as per approved drawings Clause 1706	Running m	2,415.00
10.15	**Tubular Steel Railing on Precast RCC posts, 1.2 m high above Ground Level** Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M-20 grade RCC vertical posts 175 mm x 175 mm x 1.8 m high (1.2 m above GI) with 3 holes 50 mm dia for pipe, fixed 2 m centre-to- centre complete as per approved drawings Clause 1706	Running m	1,209.00
10.16	**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	19,714.00
10.17	**Traffic Cone** Provision of red fluorescent with white reflective sleeve traffic cone made of Low Density Polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS:873	each	639.00
10.18	**Rumble Strips** Provision of 15 n0s.rumble strips covered with premix bituminous carpet,15.2 mm high at centre,250mm wide placed at 1m centre to centre at approved location to control speed, marked with white strips of road marking p aint.		

Item No.	Descriptions	Unit	Rate
	The rate per sqm of premix carpet and road marking may be adopted from Chapters 5&10 respectively for the quantities calculated from approved drawings.		
10.19	**Safety Device and sign in Construction Zones** Provision and fixing of traffic sign for limited period at a suitable location in construction zone comprising of warning zone,approach transition zone,working zoneand terminal transition zone with a minimunm distance of 2-3 m from the edgeof the carraige way.The bottom edge of the lowest sign plate to be not less than 2 M above the road level, fixed on 600mx600mx6mm angle iron post,founded and installed as per approved design and drawings,removed and disposed ofafter completion of construction work, all as per IRC:SP 55-2001 Following types of signs are required to be fixed in construction zones for safety of traffic.		
	a) Diversion one km ahead		
	b) Traffic sign ahead		
	c) Road ahead closed		
	d)Men at work		
	e)Road narrow		
	f)Un even road		
	g)slipery road		
	h)Loose chipping		
	I)Diversion		
	J)Do not enter		
	k)Road closed		
	l)Stop		
	k)Slow		
	Speed limit		
	Note: The rate for traffic signs are already worked out and given elsewhere in this chapter.The same may be adopted		
10.20	**Road Markers/Road Stud with Lens Reflector** Providing and fixing of road stud 100 x 100 mm die cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling holes 30 mm upto a depth of 600 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS:873 (Part 4) 1973.	each	398.00

PART-B

BRIDGE WORKS

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.

Chapter 11
FOUNDATION

Item No.	Descriptions	Unit	Rate
11.1	**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		
	Upto 3 m depth	cum	71.00
	3 m to 6 m depth	cum	105.00
	II) Ordinary rock (not requiring blasting)		
	Upto 3 m depth	cum	116.00
	III) Hard rock (requiring blasting)	cum	276.00
	IV) Hard rock (blasting prohibited)	cum	315.00
	V) Marshy soil	cum	335.00
11.2	**Fillling in foundation trenches as per drawing and technical specification Clause 305.3.9**		
	i) Sand filling	cum	968.00
	ii) Earth filling (For marshy soil)	cum	115.00
11.3	**Filling annular space around footing in rock as per technical specification Clause 1203.4.3.**		
	P.C.C grade M 15		
	A. With crushed Stone	cum	5,002.00
	B. With natural Gravel	cum	4,858.00
11.4	Providing concrete for plain/reinforced concrete in open foundations complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203		
	A. With crushed stone.		
	I) P.C.C grade M 10		
	Nominal mix 1:3:6	cum	5,299.00
	Nominal mix 1:3.6 (Hand mixing)	cum	5,284.00
	II) P.C.C grade M 15		
	Nominal mix (1:2.5:5)	cum	5,286.00
	Nominal mix 1:2.5:5 (Hand mixing)	cum	5,272.00

Item No.	Descriptions	Unit	Rate
	III) P.C.C. grade M 20		
	Nominal mix (1:2:4)	cum	6,022.00
	Nominal mix 1:2:4 (Hand mixed)	cum	6,007.00
	IV) R.C.C grade M 20	cum	6,297.00
	V) R.C.C. grade M 25	cum	6,845.00
	B. With Natural Gravel		
	I) P.C.C Grade M 10		
	Nominal mix 1:3:6	cum	5,164.00
	Nominal mix 1:3:6 (Hand mixing)	cum	5,149.00
	II) P.C.C Grade M15		
	Nominal mix 1:2.5:5	cum	5,173.00
	Nominal mix 1:2.5:5 (Hand mixing)	cum	5,159.00
	III) P.C.C Grade M 20		
	Nominal mix (1:2:4)	cum	5,917.00
	Nominal mix 1:2:4 (Hand mixed)	cum	5,903.00
	IV) R.C.C. M 20	cum	6,237.00
	V) R.C.C. M 25	cum	6,785.00
11.5	Brick masonry work in cement mortar in foundation complete excluding pointing and plastering as per drawing and technical specifications Clauses 600, 1202 & 1203		
	i) Brick masonry in 1:3 cement mortar	cum	5,708.00
	ii) Brick masonry in 1:4 cement mortar	cum	5,165.00
	iii) Brick masonry in cement-lime-mortar (1:0.5:4.5)	cum	5,726.00
11.6	Stone masonry work in cement mortar in foundation complete as per drawing and technical specifications Clauses 702, 704, 1202 & 1203.		
	I) **Coursed rubble masonry (1st sort)**		
	In 1:3 cement mortar	cum	3,795.00
	In 1:4 cement mortar	cum	3,508.00
	in 1:6 Cement morter	cum	2,748.00
	II) **Coursed rubble masonry (2nd sort)**		
	In 1:3 cement mortar	cum	3,851.00
	In 1:4 cement mortar	cum	3,387.00
	in 1:6 Cement morter	cum	2,749.00

Item No.	Descriptions	Unit	Rate
	III) **Random Rubble Masonry**		
	In 1:3 cement mortar	cum	3,606.00
	In cement mortar 1:4	cum	3,413.00
	in 1:6 Cement morter	cum	2,456.00
11.7	Supplying, fitting and placing HYSD bar reinforcement in foundation complete as per drawings and technical specifications Clauses 1000 and 1202	t	58,539.00
11.8	Supplying, fitting and placingTMT bar reinforcement in foundation complete as per drawings and technical specifications Clauses 1000 and 1202	t	65,489.00
11.9	Supplying, fitting and placing MS bar reinforcement in foundation complete as per drawings and technical specifications Clauses 1000 and 1202	t	70,560.00

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 12 of Chapter 11 will hold good for this Chapter also.

Chapter 12
SUBSTRUCTURE

Item No.	Descriptions	Unit	Rate
12.1	**Brick masonry work in cement mortar in substructure complete excepting pointing and plastering, as per drawing and technical specification Clauses 602, 603, 604, 1202 & 1204**		
	i) In 1:3 cement mortar	cum	6,030.00
	ii) In 1:4 Cement mortar	cum	5,756.00
	iii) In 1:5 cement mortar	cum	5,620.00
12.2	Pointing with cement mortar (1:3) on brickwork as per drawing and technical specification Clauses 613.3 and 1204	10 sqm	351.00
12.3	Plastering with cement mortar (1:4), 15 mm thick on brickwork in substructure as per technical specification Clauses 613.4 & 1204	10 sqm	1,266.00
12.4	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)**		
	In 1:3 cement mortar	cum	4,081.00
	In 1:4 cement mortar	cum	3,761.00
	In cement mortar (1:5)	cum	3,527.00
	In 1:6 Cement morter	cum	3,102.00
	II) **Coursed Rubble masonry (2nd sort)**		
	In cement mortar (1:3)	cum	3,934.00
	In 1:4 cement mortar	cum	3,561.00
	In cement mortar (1:5)	cum	3,493.00
	In 1:6 cement morter	cum	2,877.00
	III) **Random rubble masonry**		
	In cement mortar (1:3)	cum	3,512.00
	In 1:4 cement mortar	cum	3,207.00
	In cement mortar (1:5)	cum	3,241.00
	In1:6 Cement morter	cum	2,950.00
12.5	Plain/reinforced cement concrete in substructure complete as per drawings and technical specification Clauses 802, 804, 805, 806, 807, 1202 ans 1204		
	A. With Crushed Stone		
	I) **P.C.C grade M 15**		

Item No.	Descriptions	Unit	Rate
	i) Nominal mix (1:2.5:5)	cum	5,591.00
	ii) Nominal mix 1:2.5:5 (Hand mixing)	cum	5,576.00
	II. **P.C.C. grade M 20**		
	i) Nominal mix (1:2:4)	cum	6,369.00
	ii) Nominal mix 1:2:4 (Hand mixed)	cum	6,354.00
	III. **RCC Grade M20 for height upto 5 m**	cum	6,661.00
	i) For height above 5 m upto 10 m	cum	6,782.00
	IV. **RCC Grade M25 for height upto 5 m**	cum	6,847.00
	i) For height above 5 m upto 10 m	cum	6,971.00
	B. With Natural Gravel		
	I. **P.C.C grade M15**		
	i) Nominal mix (1:2.5:5)	cum	5,333.00
	ii) Nominal mix 1:2.5:5) Hand mixing	cum	5,274.00
	II. **P.C.C Grade M20**		
	i) Nominal mix(1:2:4)	cum	6,259.00
	ii) Nomimix(1:2:4) Hand mix	cum	6,181.00
	III. **R.C.C Grade M20**		
	i) Forheight up to 5M	cum	6,596.00
	ii)Forheight above 5M upto 10M	cum	6,716.00
	IV **R.C.C.Grade M 25**		
	i) Height upto 5M	cum	6,817.00
	ii) Height above 5 M upto 10 m	cum	6,941.00
12.6	**Supplying, fitting and placing** HYSD bar reinforcement (Fe 415) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	58,634.00
12.7	**Supplying, fitting and placing TMT bar** reinforcement (Fe 415) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	65,583.00
12.8	**Supplying, fitting and placing** with MS bar reinforcement (Fe 415) in substructrue complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	70,654.00
12.9	**Providing weepholes in brick** masonry/stone masonry, plain/ reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos.	182.00

Item No.	Descriptions	Unit	Rate
12.10	**Backfilling behind abutment**, wing wall and return wall complete as per drawings & technical specification Clause 1204.3.8		
	i) Granular material	cum	815.00
	ii) Sandy material	cum	1,010.00
12.11	**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	1,452.00
12.12	**Supplying, fitting and fixing in position true to line** and level elastomeric bearing conforming to IRC:83 (Part-II) Section IX complete, including all accessories as per drawings and technical specification Clause 1207.1	Cubic cm	**1.40**
12.13	**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		
	i) With Crushed stone	Running m	413.00
	ii) With Natural Gravel	Running m	396.00
12.14	**Providing pressure relief pipes** 100 mm dia in bottom slab of box cell on a filter media base of 500 mm x 500 mm as per drawing and technical specification Clause 1205.5.7	Nos.	476.00

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.

Chapter 13
SUPERSTRUCTURE

Item No.	Descriptions	Unit	Rate
13.1	Providing and laying reinforced cement concrete in superstructure as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5		
	A. With crushed stone		
	I. **R.C.C grade M 20**		
	(I) For nominal mix 1:2:4		
	a) Height upto 5 M	cum	7,213.00
	b) Height from 5m to 10M	cum	7,513.00
	c) Height above 10 M	cum	7,814.00
	II. **For nominal mix 1:2:4 (Hand mixed)**		
	a) Height upto 5 M	cum	7,218.00
	b) Height 5m to 10M	cum	7,518.00
	c) Height above 10M	cum	7,819.00
	III. **For design mix RCC M 20**		
	a) Height upto 5M	cum	7,025.00
	b) Height 5Mto 10 M	cum	7,318.00
	c) Height above 10 M	cum	7,611.00
	IV. **R.C.C M 25**		
	a) Height upto 5M	cum	7,869.00
	b) Height from 5M to 10 M	cum	8,197.00
	c) Height above 10 M	cum	8,525.00
	V. **R.C.C. Grade M 30**		
	a) Height upto 5M	cum	8,231.00
	b) Height from 5M to 10M	cum	8,574.00
	c) Height above 10M	cum	8,917.00
	B. **With Natural Gravel**		
	I. **R.C.C. grad M 20**		
	(I) For Nominal mix 1:2:4		
	a) Height upto 5M	cum	7,196.00
	b) Height from 5M to 10M	cum	7,496.00
	c) Height above 10M	cum	7,796.00
	II. Nominal mix 1:2:4 (Hand Mixed)		
	a) Height upto 5M	cum	7,148.00

Item No.	Descriptions	Unit	Rate
	b) Height from 5M to 10M	cum	7,446.00
	c) Height above 10M	cum	7,744.00
	(III) For Design mix RCC M 20		
	a) Height upto 5 M	cum	6,963.00
	b) Height from 5m to 10M	cum	7,254.00
	c) Height above 10 M	cum	7,544.00
	II. **R.C.C M25**		
	a) Height upto 5M	cum	7,799.00
	b) Height from 5M to 10M	cum	8,124.00
	c) Height above 10M	cum	8,449.00
	III. **R.C.C M30**		
	a) Height upto 5M	cum	8,161.00
	b) Height from 5M to 10 M	cum	8,501.00
	c) Height above 10 M	cum	8,841.00
13.2	**Supplying, fitting, and placing** HYSD bar reinforcement in superstructure complete as per drawing and technical specifications Clauses 1002, 1010 and 1202	t	59,410.00
13.3	**Supplying, fitting, and placing** TMT bar reinforcement in superstructure complete as per drawing and technical specifications Clauses 1002, 1010 and 1202	t	66,360.00
13.4	**Supplying, fitting, and placing** MS bar reinforcement in superstructure complete as per drawing and technical specifications Clauses 1002, 1010 and 1202	t	71,431.00
13.5	**Providing and laying cement** concrete wearing course M 30 grade including reinforcement complete as per drawing and technical specifications Clauses 800 and 1206.3		
	A. With crushed stone	cum	13,233.00
	B. With Natural Gravel	cum	13,214.00
13.6	**Construction of R.C.C. railing** of M 25 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and 1208.3	Running m	2,584.00
13.7	**Providing fitting and fixing** mild steel railing complete as per drawing and technical specifications Clause 1208.2	Running m	3,520.00

Item No.	Descriptions	Unit	Rate
13.8	**Providing and fixing in position** pipe railing consisting of IS Rolled steel joist posts designation IS MB 100 (100x75) at 2.5 m interval and three rows of 50 mm dia steel pipes (light) including fixing in position on bridge deck complete as per drawing and technical specifications Clause 1208.2	Running m	2,346.00
13.9	**Brick masonry work** in cement mortar 1:3 in parapet excluding pointing and plastering as per drawing and technical specifications Clauses 600, 900 and 1208.4	cum	5,740.00
13.10	**Drainage spouts complete** as per drawing and technical specifications Clause 1209	Nos.	1,535.00
13.11	**P.C.C. M 15 ordinary** grade (1:2.5:5) levelling course below approach slab complete as per drawing and technical specifications Clauses 800 and 1211		
	A. With crushed stone		
	i) Nominal mix (1:2.5:5)	cum	5,083.00
	ii) Nominal mix 1:2.5:5 (Hand mixing)	cum	5,019.00
	B. With Natural Gravel		
	i) Nominal mix(1:2.5:5)	cum	4,963.00
	ii) Nominal mix(1:2.5:5)Hand mixed	cum	4,949.00
13.12	**Reinforced Cement Concrete M 25 grade approach slab including reinforcement and formwork complete as per drawing and technical specifications Clauses 800 and 1211**		
	A. With crushed stone	cum	10,840.00
	B. With Natural Gravel	cum	10,784.00
13.13	**Providing and laying of an elastomeric slab seal** expansion joint compleate as per approved drawing and approved specification to be installed by manufacturer/supplier or their authorised representative ensuring compliance to the manufacturers instructuion for instalation and as per technical specification clause 1207.2.5	Running m	16,461.00
13.14	**Providing and laying of ancompression seal consisting of** steel armoured nosing at two edges of the joint gapsuitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and formed intothe joint gap with special adhesive binder as per drawing and technical specification Clause 1207.2.4	Running m	15,931.00

Item No.	Descriptions	Unit	Rate
13.15	**Providing and laying a buried expansion joint, covered** with 12 mm thick, 200 mm wide galvanised weldable structrual steel plate as per IS:2062, placed symmetrical to centre line of the joint, resting freely over the top surface of the deck concrete, welding of 8 mm dia, 100 mm long galvanised nails spaced 300 mm c/c along the centre line of the plate, as per technical specifications Clauses 1207.2.3	Running m	1,297.00
13.16	Filler Joint		
	i) **Providing and fixing** 2 mm thick corrugated copper plate in expansion joint as per drawing and technical specifications Clause 1207.2.2	Running m	1,123.00
	ii) **Providing and fixing** 20 mm thick compressible fibre board in expansion joint complete as per drawing and technical specifications	Running m	316.00
	iii) **Providing and fixing** in position 20 mm thick premoulded joint filler in expansion joint for fixedends of simply supported spans,covered with sealant complete as per drawing and technicalspecification.	Running m	285.00
	iv) **Providing and filllling joint sealing** compound as per drawings and technical specifications with coarse sand and 6 per cent bitumen by weight.	Running m	13.00
13.17	**Stone masonry** in cement mortar 1:3 for parapet complete as per drawing and technical specifications Clauses 700 and 1208.4		
	I. Random rubble masonry	cum	3,512.00
	II. Coursed rubble masonry (1st sort)	cum	4,081.00
13.18	**Pointing with cement mortar** (1:3) on brickwork in parapet as per technical specifications Clauses 613.3 and 1208.4	10 sqm	351.00
13.19	**Plastering with cement mortar (1:3) 15 mm thick on** brickwork in parapet as per technical specifications Clauses 613.4 and 1208.4	10 sqm	1,266.00
13.20	**Providing and laying parapet** with PCC M 15 as per drawing & technical specifications Clauses 800 and 1208.4		
	A. With crushed stone		
	i) Nominal mix 1:2.5:5 (Hand mixing)	cum	5,576.00
	ii) Nominal mix (1:2.5:5)	cum	6,369.00
	B. With Natural Gravel		
	i) Nominal Mix 1:2.5:5(Hand mixing)	cum	5,274.00
	ii) Nominal Mix (1:2.5:5)	cum	5,333.00

Item No.	Descriptions	Unit	Rate
13.21	**Providing bituminous wearing coat** comprising of 20 mm thick premix carpet with 5 mm thick seal coat Type B for culverts as per drawing and technical specifications Clauses 1206.2 and 500		
	i) Rate for wearing coat as per item No. 5.9 of Chapter 5	sqm	
	ii) Rate for seal coat Type B as per item No. 5.12 of Chapter 5	sqm	
13.22	**Providing bituminous wearing coat** comprising of 50 mm thick bituminous macadam overlaid by 20 mm thick premix carpet with 5 mm thick seal coat Type B		
	i) Rate for BM layer may be analysed as per item No 5.3 of Chapter 5	cum	
	ii) Rate of 20 mm premix carpet wearing course as per item No.5.9 of Chapter 5	sqm	
	iii) Rate of seal coat Type B as per item No. 5.12 of Chapter 5	sqm	
13.23	**Brickwork in arches** in cement mortar 1:4 complete including centering and shuttering excluding pointing and plastering as per drawing and technical specifications Clauses 606 and 1205.1	cum	13,532.00
13.24	**Coursed rubble stone** masonry arch (Ist sort) in cement mortar (1:4) complete including centering etc. complete as per drawing and technical specifications Clauses 706 and 1205.1		
	i) For arch above 6Mspan	cum	8,377.00
	ii) For Arch 4 m to 6 m span	cum	7,540.00
	iii) For Arch less than 4 m span	cum	6,283.00
13.25	**Providing & Laying reinforced cement concrete arch complete including centering and shuttering excluding reinforcement as per drawings and technical specifications Clauses 800, 900 and 1205.1**		
	A. **With crushed stone**		
	I. RCC grade M20 (1:2.4) nominal mix		
	a) For arch above 6 m span	cum	9,136.00
	b) For arch 4 m to 6 m span	cum	8,527.00
	c) For arch less than 4 m span	cum	7,918.00
	II. RCC Grade M 25		
	a) For arch above 6 m span	cum	9,950.00
	b) For arch 4 m to 6 m span	cum	9,287.00
	c) For arch less than 4 m span	cum	8,623.00

Item No.	Descriptions	Unit	Rate
	B. **With Natural Gravel**		
	I. R.C.C.Grade M20 (1:2:4) nominal mix		
	i) For Arch above 6M	cum	9,108.00
	ii) For Arch 4M to 6M span	cum	8,501.00
	iii) For Arch less than 4M span	cum	7,894.00
	II. R.C.C Grade M25		
	i) For Arch above 6M span	cum	9,922.00
	ii) For Arch 4M to 6M span	cum	9,261.00
	iii) For Arch less than 4 M span	cum	8,599.00
13.26	**Providing steel** R.S.Js/built-up steel sections including cutting, welding/rivetting, hoisting, fixing in position for composite girders with shear connectors complete with painting as per drawing and technical specifications Clause 1205.6		
	Steel section	quintal	8,655.00

Chapter – 14

PROTECTION WORKS

Preamble:

1 Three types of aprons as under have been catered for:

a. Boulder apron laid dry

b. Boulder apron laid in wire crates

c. Apron laid in cement concrete blocks of M 15 grade

2 Pitching proposed is of the following types:

a. Brick pitching

b. Boulder pitching

c. CC Block pitching

3 A toe wall for toe protection of pitching can be either in random rubble masonry or in nominal mix cement concrete M 10, or in brick masonry. Depending upon the design, the rates may be adopted.

4 Flooring has been proposed in dry rubble stone, rubble stone laid in cement mortar 1:3, cement concrete blocks M 15 and brick on edge laid in cement mortar (CM) 1:3.

5 Curtain walls proposed are of the following types:

a. Brick masonry in CM 1:4

b. Coursed rubble stone masonry (1st sort) is CM 1:3

c. Cement concrete M-10 grade

6 Lead for stone materials from quarry to be considered in case of pitching and apron works.

Chapter 14
PROTECTION WORKS

Item No.	Descriptions	Unit	Rate
14.1	**Providing and laying boulder apron** for bed protection with stone boulders of minimum size and weight as per Table 1300.1, no fragment weighing less than 25 kg laid dry complete as per drawing and technical specifications Clause 1301	cum	1,166.00
14.2	P**roviding 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	1,910.00
14.3	**Providing and laying of apron** with cement concrete blocks of size as per Table 1300.1 cast-in-situ and made with nominal mix of M-15 grade cement concrete as per drawing and technical specifications Clause 1301	cum	5,263.00
14.4	**Single bamboo palasiding** / walling of whole 2nd class bamboo (Jati or Bethua) 75mm dia and closely packed & driven including fitting fixing with half bamboo kamis horizontally in three rows with cane or tying with wire complete and struts 1.5 m apart longitudinally and providing brush wood as per drawing and technical specifications Clause 1302.5		
	A) Driven at least 900 mm below ground and 1200 mm aboveground	Running m	498.00
	B) Driven at least 900 mm below ground and 900 mm above ground on average	Running m	470.00
14.5	**Providing and laying pitching on slopes laid over prepared filter media as per drawing and technical specifications Clause 1302**		
	I. Stone/Boulder	cum	1,166.00
	i) Cement concrete blocks of size as per Table 1300.2 cast in cement concrete of grade M 15		
	a) Concrete grade M 15	cum	5,392.00
	iii Brick pitchng set in cement mortar 1:4	cum	5,361.00
14.6	**Providing and laying filter material underneath pitching in slopes complete as per drawing and technical specifications Clause 1302**	cum	1,332.00
14.7	**Providing and laying flooring laid** over cement concrete bedding complete as per drawing and technical specification Clause 1303		

Item No.	Descriptions	Unit	Rate
	i) Rubble stone laid in cement mortar 1:3	cum	3,079.00
	ii) Cement conrete blocks grade M 15	cum	5,873.00
	iii) Brick on edge laid in cement mortar (1:3)	cum	4,289.00
	Note : Cement concrete bedding to be measured and paid extra.		
14.8	**Providing and laying** of dry rubble flooring complete as per drawings and technical specifications Clause 1303.3	cum	1,378.00
14.9	**Providing and laying** curtain walls complete as per drawing and technical specification Clause 1304		
	i) Brick masonry in cement mortar (1:4)	cum	5,681.00
	ii) Coursed rubble masonary (2nd sort) in cement mortar (1:4)	cum	3,561.00
	iii) Cement concrete grade M 10	cum	5,034.00
14.10	**Construction of flexible apron** 1 m thick comprising of loose stone boulders weighing not less then 25 kg beyond curtain wall	cum	963.00
14.11	**Construction of toe walls** for protection of slopes as per drawing and technical specifications Clause 1302.5		
	i) Random rubble masonry in case of stone pitching laid with cement mortar (1:5)	cum	2,876.00
	ii) Brick masonry in cement mortar 1:4 in case of brick pitching	cum	5,225.00
	iii) Cement concrete grade M 10 in case of concrete block pitching Nominal mix 1:3:6	cum	4968.00
14.12	**Single bamboo spur** and palisading of whole 2nd class bamboo (jati or Bethua) 65 mm to 75 mm dia and closely packed & driven, including fitting, fixing with half bamboo kamis horrizontally in three rows with cane or tying wire complete and struts 1500 mm apart longitudinally and providing brush wood as per drawing and technical specifications Clause 1302.5		
	i) Driven at least 900 mm below ground and 1800 mm above ground on average	Running m	581.00
	ii) Driven at least 900 mm below ground and 900 mm above ground on average	Running m	474.00
14.13	**Single bamboo spur** and palisading of whole 1st class bamboo (Bholuka or Barua) 85 mm to 100 mm dia. Closely packed & driven including fitting, fixing with half 2nd class bamboo (jati or Bethua) horizontally in three rows with cane or tying wire complete and struts 1500 mm apart longitudinally and providing brush wood in the spur as per drawings and technical specifications		

Item No.	Descriptions	Unit	Rate
	A. Driven at least 900 mm below ground and 1800 mm above ground	Running m	659.00
	B. Driven at least 900 mm below ground and 900 mm above ground on average	Running m	403.00
	C. Driven at least 600 mm below ground and 1200 mm above ground on average.	Running m	375.00
14.14	**Bamboo spur 'A' type** with whole bamboo 85mm-100mm dia, placed 230 mm centre to centre driven 900 mm below ground and 1200 mm to 1500 mm above ground tied with 2nd class bamboo (jati or Bethua) on either side at 450 mm apart horizontally with galvanised wire etc. complete as per drawings and technical specifications		
	A. 2nd class bamboo (jati or Bethua) 75 mm dia	Running m	614.00
	B. 1st class bamboo (Bholuka or Barua) 85 mm to 100 mm dia	Running m	502.00
14.15	**Providing 'A' type single** spur with 1st class bamboo (Bholuka or Barua) 85 mm to 100 mm dia. Driven closely placed 3m to 4m above ground and 1200 mm to 1500 mm below ground tied with cane or coir string, half 2nd class bamboo (jati or Bethua) horizontally on both face placed not more than one metre apart including whole bamboo struts inside one metre apart and 2 nos. of purlin at top and bottom fitted with vertical struts at 1500 mm apart and filling with brushwood or jungle wood inside the spur complete as per drawing and technical specifications	Running m	862.00
14.16	**Providing close bamboo** toe walling consisting of 65mm to 75mm dia bamboos of length ranging from 1.2 m to 3m driven at 150 mm centre to centre and provided with three horizontal split bamboo runner fixed with nails. All bamboos to be duly protected by coal tar painting.	Running m	694.00
14.17	**Double timber spur with two rows at 800 mm c/c apart of** 1st class local wood piles with timber of Azar/Nahar/Nageswar / Zarul wood 150 mm to 200 mm dia driven 2000 mm minimum below ground and 3600 mm above ground average placed at 800 mm belts, bracings etc. of 100 mm x 75 mm size 1st class local wood longitudinally & crosswiswe at ends fitted with 10 mm dia bolts and nuts etc. including coaltarring of timber members and cost of necessary bamboo stagings etc. as directed by the Engineer as per drawing and technical specifications	Running m	24,125.00
14.18	**Supplying and filling up hollows of the timber spur to an aver** age height of 3600 mm above ground with jungle wood branches as per drawing and technical specifications as directed by the Engineer.	Running m	52.00

Chapter – 15
MAINTENANCE OF ROADS

Preamble:

1 In the case of rain cuts, it has been assumed that some material cut by rain, approximately 25 per cent will be available at site which can be retrieved and re-used and the balance 75 per cent is required to be provided as fresh material.

2 For making up earthen shoulders, it has been assumed that on an average 150 mm filling will be required. Similarly, for stripping of excess soil from shoulder, an average depth of 75 mm has been assumed.

3 Pothole repairs and patchwork are provided to be done by using Mixall 6/10 M.T.

4 In case of maintenance of Gravel and W.B.M. surfaces, it has been assumed that 25 per cent material will be available at site, which can be retrieved and re-used and the balance 75 per cent is required to be provided as fresh material.

5 The items of periodical renewal by premix carpet and surface coating have also been included in the rate analysis for guidance of field Engineers. The detailed analysis of various items of bituminous works is given in Chapter 5 and rates can be taken from there as appropriate. Additional provision of patch repair and profile correction varying from 10 per cent to 30 per cent of the material of premix carpet/ surface dressing may be made in the estimate of periodical renewal.

Chapter 15
MAINTENANCE OF ROADS

Item No.	Descriptions	Unit	Rate
15.1	**Restoration of Rain Cuts** Restoration of rain cuts with soil, moorum gravel or a mixture of these, clearing the loose soil, benching for 300mm width laying fresh material in layers not exceeding 250 mm and compaction with plate compactor or power rammer to restore the original alignment, level and slopes as per drawings and technical specifications Clause 1902		
	A. Manual Means	cum	101.00
	B. Mechanical Means	cum	93.00
15.2	**Maintenance of Earthen shoulder (filling with fresh selected soil)**		
	1. Making up loss of material/irregularities on shoulders to the design level by adding fresh approved selected soil and compacting it with appropriate equipment at OMC upto a lead of 1000 m as per technical specification Clause 1903 Maintenance of Earhen shoulder (stripping of excess soil)	sqm	62.00
	2. Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor at OMC as per drawings and Technical Specification Clause 1903	sqm	14.00
15.3	**Maintenance of Bituminous surface road** i) **Repair to pot holes by removal of failed material,** trimming the sides to vertical and levelling the bottom,cleaning the same with compressed air or any appropriate method filled with 75 mm B.M. applying bitumen emulsion prime coat at the bottom and bitumen emulsion tack coat on sides and on bottom as per technical specification Clause 502 and 503	cum	6,976.00
	ii) **Patch repair on already filled** pot holes with 75 mm BM with 20 mm premix carpet and seal coat Type B as per drawings and technical specification Clause 1904.2	sqm	160.00
	iii) **Repair to pot holes and removal** of loose material, trimming of sides, cleaning of surface by providing tack coat, 20 mm thick pre-mix carpet and seal coat type B specification Clause 1904.2	sqm	159.00
	iv) **Repair to pot holes and removal of loose material,** trimming of sides, cleaning of surface by providing tack coat with bitumen emulsion, 20 mm thick pre-mix carpet using catonic bitumen emulsion and seal coat type B with bitumen emulsion	sqm	165.00

Item No.	Descriptions	Unit	Rate
15.4	**Maintenance of Gravel Road** Maintenance of gravel road including making up the loss of profile, rectifying corrugated surface, filling up of depressions, pot holes and erosion gullies by adding fresh material and compacting it with appropriate equipment or to strip excess of material from the road surface as per drawings and technical specification Clause 1905	sqm	305.00
15.5	**Maintenance of WBM Road** Maintenance of WBM road including filling up of pot holes, ruts and rectifying corrugated surface, damaged edges and ravelling as per technical specification Clause 1906.	sqm	229.00
15.6	**Maintenance of Drains** The maintenance of drains include erosion, repair, clearing, cleaning, reshaping, regrading, deepening of side drains as well as catch water drains as per technical specification Clause 1907.	m	2.00
15.7	**Maintenance of Culverts** i) Maintenance of Hume pipe Culvert by way of Clearing, Cleaning, Erosion repair, repairs to cracks, parapet wall and protection work as per drawing and technical specification Clause 1908 One No.	Hume Pipe	1,238.00
	ii) **Maintenance of Culverts Slab type** Maintenance of Slab type Culverts by way of clearing, Cleaning, Erosion repair, repairs to cracks, parapet walls and Protection works as per drawing and technical specification Clasue 1908	Culvert	2,492.00
15.8	**Maintenance of Causeway** Maintenance of Causeway by way of minor Surface repairs, replacing Guide Posts, repair of flood gauges, removal of debris, providing boulders and protection work and painting as per technical specification Clause 1909	m	38.00
15.9	**Maintenance of Road Signs** Maintenance of road signs by way of cleaning and repainting of mandatory / requlatory / cautionary / informatory and place identifications sign board as perdrawings and technical specification Clause 1910	km	927.00
15.10	**Maintenance of steel and RCC Railing** I Repair of steel railing to bring it to original shape cleaning and repainting as per drawing and technical specification Clause 1911		

Item No.	Descriptions	Unit	Rate
	Steel Railing ii) Repair of RCC railing to bring it to the original shape, cleaning and repainting as per drawings and technical specification Clause 1911	Running m	314.00
	RCC Railing	m	148.00
15.11	**Maintenance of 200 metre and km stones** Maintenance of 200 metre km stone by way of refiting of tilted stones repairing with cement mortar, cleaning, repairing and lettering on 200 metre km stone and 5th km stone as per drawing and technical specification Clause 1912		
	i) Painting two coats with synthetic enamel paint	km	87.00
	ii) Printing letters and figures of any shade with synthtic enamel paint of any approved colour to give an even shade	km	326.00
15.12	**Cutting of branches of trees shrubs and trimming of grass and weeds** i) Cutting of branches of trees and shrubs from the road way or with in R.O.W including disposal of wood and leaves to suitable location as per technical specification Clause 1914	one tree	64.00
	ii) Cutting of shrubs from the road way or with in R.O.W and disposal of shrubs to suitable locations as per technical specifications Clause 1914	each	4.00
	iii) Trimming of grass and weeds from the shoulders/berms and disposing off the same to suitable locations as per technical specifications Clause 1914	sqm	1.00
15.13	**White washing of parapet walls of CD work and tree truncks** White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning scraping etc. as per technical specifications Clause 1915	sqm	13.00
15.14	**Periodical Renewal to existing bituminous surface**		
	1 Open graded Premix carpet 20 mm thick		
	i) Tack coat Rates as per item 5.2 (ii)	sqm	
	ii) Pre-mix carpet using bituminous (penetration grade modified bitumen) binder Rates as per item No. 5.9 OR	sqm	

Item No.	Descriptions	Unit	Rate
	iii) Premix carpet using bitumen Emulsion		
	Rates as per item No. 5.10	sqm	
	iv) Seal coat Type A, B or C		
	Rates as per item No. 5.11	sqm	
	2 Surface dressing single coat/first coat or 2nd coat		
	Rates as per item No. 5.6	sqm	

Chapter – 16
Misceellaneous items

Preamble:

1 This Chapter includes various miscellaneous items, which are not covered by MORD specification for Rural Road 2004.

2 A) A number of need items for Road works and Bridge work have been incorporated in this chapter as per MoSRT&H specification for Road and Bridge wor's also.

3 As per latest revised version of MoRD specification for rural Roads Specific importance to some new items alongwith few new technologies like cold mix, Semi dense Biituminous concrete, soil stabilization in subgrade and Base, use of locally available marginal materials, Industrial wastes, provisions of proper road signs and other traffic control devices, Geosynthetics, Jute geo textiles alongwith construction of long span Bridges as per version of MORTH has been included in this edition.

General :

a) The clauses of MoSRT&H specifications for Roads and Bridge works, which have been mentioned for each item, may be referred to detail specifications and construction procedure. The specifications mentioned here are only brief description.

b) Quality control works shall be governed by section 900 of Mosrt&H specifications.

c) The classification of soil shall be as per clause 301.2 of MoSRT&H specifications.

d) The specification of materials shall be governed by section 1000 of MoSRT&H specifications for Road and Bridge works.

e) Quantities of cement in various grade of cement concrete have been taken as per IRC: 21-2000 and IRC:18-2000.

f) The coarse and fine aggregate shall confirm to IS:383.

Road Works :

a) The machinary and equipment included in various analysis are as per various specifications of MoSRT&H are mandatory.

b) Choice of grade of Bitumen shall be made as per the guidelines given in Appendix-4 of MoSRT&H specifications.

c) The specification and requirement for modified binder with various type of modifier have been laid down in clause 521 of MoRST&H specification and IRC:SP:53-2002 which shall be followed.

d) The guideline given vide Annexure-A to clause 501 of MoSRT&H specification in regard to protection of environment shall be followed for a particular situation.

e) The quantities taken as output of the item in the rate are the compacted quantities.

Bridge Works :

General :

a) The description of items is given briefly and linked with relevant clause of MoSRT&H specification for Raod & Bridge works, which may be refered for detailed description, provisions and interpretation.

b) For concrete works admixtures has been used to provide best solution in construction of superstructure of bridge works. Water reducing plasticizing admixture such as Master plast PL-1 or its equivalent is used for concrete works below M-25 grade concrete @ 100ml-200ml per bag of cement (50kg per bag). However super plasticizer such as Master plus SPL-2 or its equivalent has been used for concrete above M-25 Grade @ 0.2 to 1.2 lit per bag of cement to improve workability of concretre. Use of admixture should be made with prior approval of the concerned Executive Engineer.

c) Normal method of curing has been covered in the schedule. Steam curing has been included in the items of precast concrete PSC beams.

d) The items do not cover all components of bridge projects for all situations. There may be specialised items for specific cases, which need to be analyzed keeping in view the basic approach.

Foundation:

a) Mixing of Cement concrete has been considered both by using concrete mixure and batching plant.

b) Concrete batching plant is considered to be placed within 10 km of the bridge site.

c) The coarse and fine aggregate for cement concrete shall be as per IS:383.

d) Pneumatic sinking is a specialized job. All safety bprecaution as per IS:4138 are required to be taken.

e) The levelling course below pile cap is proposed with M15 grade concrete.

f) Appendix-4 of IRC:78-2000 has to be referred regarding precaution to be taken during sinking of well.

g) The concrete mix used in boottom plug shall have minimum cement content of 330kg/cum and a slum of about 150mm.

h) Necessary safety precautions shall be takne for excavation on open foundatons for which guidence may be taken from IS:3764.

i) A levelling course of 100mm thickness in M10(1:3:6) shall be provided before lying open fondations.

j) The well curb shall be in RCC of mix not leaner than M25 grade with minimum steel reinforcement of 72kg/cum excluding bond rods.

k) The top of bottom plug shall be at least 300mm above top of curb.

l) In case of cement concrete piles, the minimum grade of concrete shall be M35 with minimum cement content of 400kg/cum.

m) The guidence for piles is to be obtained form IS:2911.32

n) In the items for well foundation, provision for normal island/temporarey protection, deep islands/ coffer-dams with wooden bellies and sheet piles have ben made.

Substructure :

a) Filter media and backfilling behind abutments are required to be provided as per guidelines given in IRC:78-2000.

b) Weep holes shall be provided as per clause 2706 fo MoSRT&H specification.

c) In case of roller-cum-rocker bearings, only full circullar rollers are to be provided.

d) All bearings shall be set truly level so as to have full and even seating.

e) For elastomeric bearing pads, the concrete surface shall be levelled such that the variation is not more than 1.5mm from a straight edge placed in any direction across the area.

f) For spans in grade, the bearing shall be placed horizontal by using sole plates for suitably designed RCC pedestals.

Superstructure:

a) The rate for anti-corrosive treatment is ascertained from firms specilized in this work. In this connection circular No. RW/NH-34041/44/91-SR&R dt. 21.3.2000 of Ministry of Road Transport and Highways may be referred for further details.

b) MoSR&TH's letter No. RW/NH-34059/1/96/S&R dt. 30.11.2000 and subsequent corrigendum dt. 25.1.2001 may be referred for detailed specification and provisions for various types of expansion joints.

B) Cement concrete pavement.

a) High capacities batch mix plants of 75cum/hour (effective output) has been considered in the rate analysis of cement concrete pavement works.

b) Super plasticizer admixture has been provided to improve workability with reduced water cement ratio.

c) Cement 43 grades have been catered for cement concrete pavement. However for dry lean concrete cement of 33 grade may be prefered.

C) In works where mixing plant are used rates are inclusive of an initial lead of 10km from mixing plant to work site.

D) Overheads and contractors profit : Due to usage of higher output of plant and machineries, Overheads are considered @10% for item of road works and 20% for items of Bridge works. Contractors profit is considered @10% for both Road works and Bridge works.

E) VAT @5% and Assam building and other construction workers welfare cess @ 1% has been added in the analysis over above.

The other items includes cold weather bridge, Bamboo bridge, Timber bridge, etc in APWD works which are not covered by MORD and MoSRT&H Data book.

Chapter 16
Miscellenious Items

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.1		**Construction of Base/Subbase of pavement with lean concrete-Fly ash-**Construction of Base/sub-base using cement, sand, fly ash and coarse aggregates proportioned as per table 4 of IRC:74/ 1979 and with water content ratio, slump and compressive strength as defined in the said table, mix prepared in a batching and mixing plant and compacted with a vibratory roller 8 to 10 tonnes capacity within the time limit laid down vide clause 7.6.3. of I.R.C. 74-1979, construction joint properly formed at end of the days work, cured for 14 days all specified in IRC 74-1979. specifications Clause 1902	cum	3572.00
16.2		**Cement Treated Crushed Rock or combination** as per clause 403.2 and table 400. 4 in Sub base/Base (Providing, laying and spreading Material on a preapared sub grad, adding the designed quantity of cement to the spread Material, mixing in place with rotavator grading with motor grader and compacting with road roller at OMC to achieve desired unconfined compressive strength and to from a layer fo sub base/base.)		
		(i) 403 For Sub-Base course	cum	2400.00
		(ii) For Base course	cum	2289.00
		Soil stabilisation in sub-grade and Base course		
16.3		**Providing, laying, spreading** and compacting available soil (excluding clay soil) in Sub-grade course including insitu mixing 4% of RBI 81 product, spreading in uniform layers with motor grader on a prepared base including watering and compacting with 8 to 10 tonne vibratory power roller to achieve the desired density including all matrials, labour, HOM of machinery, etc. complete as per specifications.	cum	3537.00
16.4		**Providing, laying, spreading** and compacting available clay soil in Sub-grade course including in situ mixing 30% Stone Dust, 70% Soil & 4% of	cum	3800.00

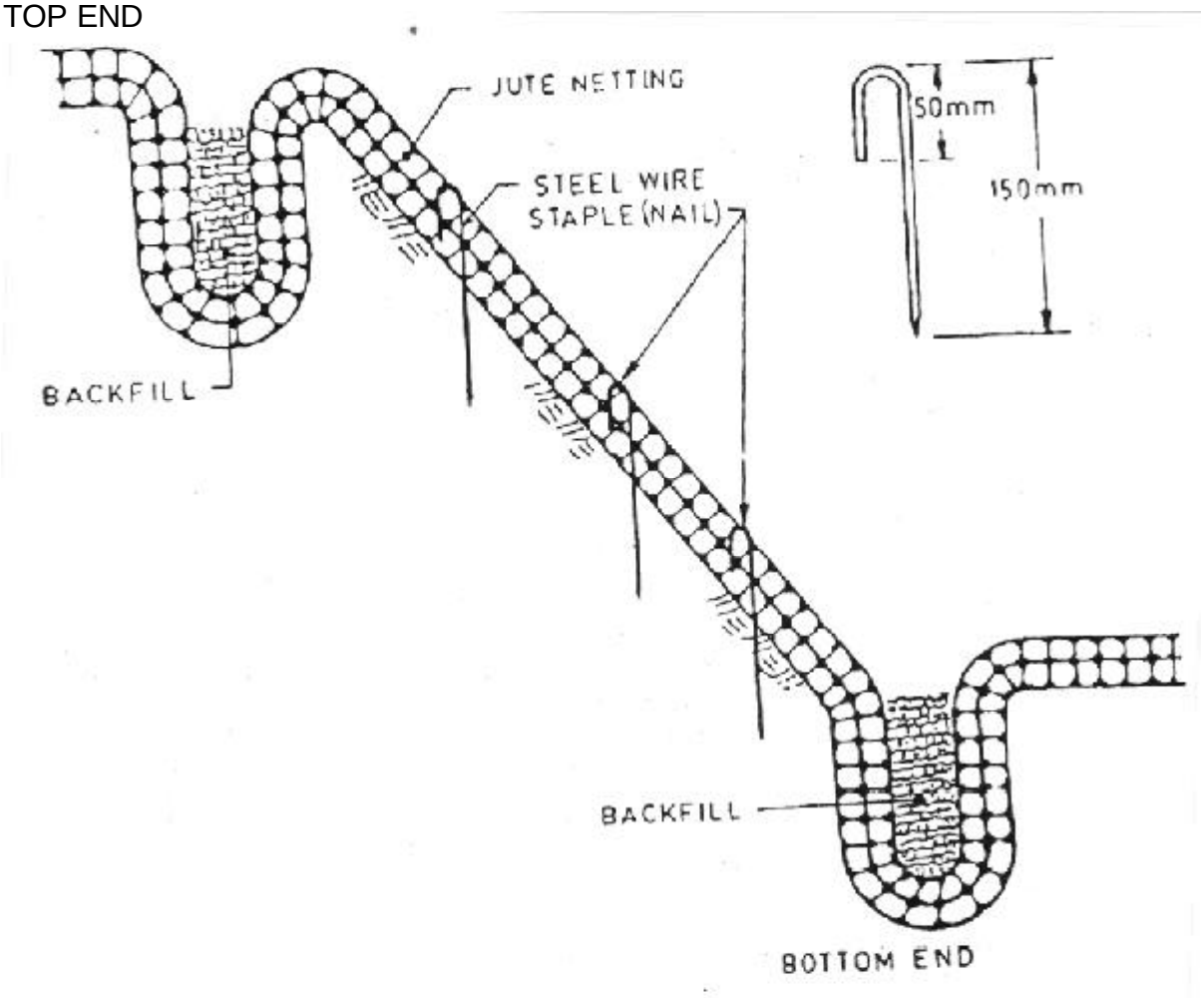
PART-C

MISCELLANEOUS WORKS

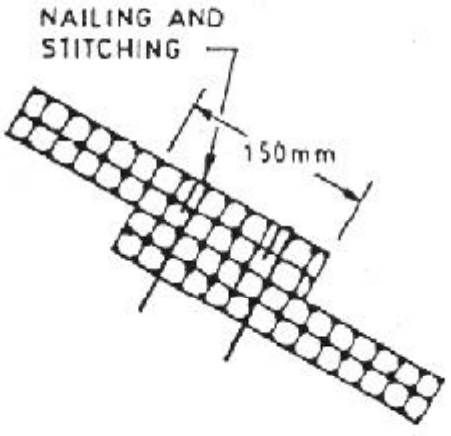
Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		RBI 81 product, spreading in uniform layers with motor grader on a prepared base including watering and compacting with 8 to 10 tonne vibratory power roller to achieve the desired density including all matrials, labour, HOM of machinery, etc. complete as per specifications.		
16.5		**Providing, laying, spreading** and compacting available soil (excluding clay soil) and aggregate in base course including in situ mixing 30% Aggregate, 70% Soil & 4% of RBI 81 product, spreading in uniform layers with motor grader on a prepared base including watering and compacting with 8 to 10 tonne vibratory power roller to achieve the desired density including all matrials, labour, HOM of machinery, etc. complete as per specifications.	cum	4351.00
16.6		**Providing, laying, spreading** and compacting available soil in base course including in situ mixing 30% Aggregate, 20% Stone Dust, 50% Soil & 4% of RBI 81 product, spreading in uniform layers with motor grader on a prepared base including watering and compacting with 8 to 10 tonne vibratory power roller to achieve the desired density including all matrials, labour, HOM of machinery, etc. complete as per specifications.	cum	4581.00
16.7		**Jute Geo Textile** **(a) Wooven Jute Geo Textile** for Road Construction and slope management purpose-Supplying, testing and installation of 100cm wide woven jute geotextiles (JGT) 724 gm/sq.m posseing tensile strength of 25kn/m (+10%,-5% tolerance) with a porometry around 150 to 400 microns and thickness 2mm for application on road sub grades and embankments. Jute fabric to be laid with overlaps of 100mm crosswise and 300 mm longitudinally duly secured to subgrade by U shaped m.s staples (11 gauge)/round head country nail of 150mm length at an	sq.m	100.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
interval of 750mm as per		direction of the engineer-in-charge. (Rates F.O.R Guwahati)		
		(b) Wooven Jute Geo Textile for River Bank Protection-Supplying, testing and installation of 100cmwide woven jute geotextiles (JGT) 627 gm/ sq.m posseing tensile strength of 20kn/m(+10%,-5% tolerance) with a porometry around 150 to 400 microns and thickness 2mm for application in river bank protection work. Jute fabric to be laid with overlaps of 100mm crosswise and 300mm longitudinally duly secured by U shaped m.s staples (11 gauge)/round head country nail of 150mm length at an interval of 750mm as per direction of the engineer-in-charge. (Rates F.O.R Guwahati)	sq.m	118.00
		(c) Open weave Jute Geo Textiles for control of surficial soil erosion - Supplying, testing and installaton of 100cm wide woven jute geotextiles(JGT) 500gm/sq.m posseing tensile strength of 6.5kn/mon slopes of embankment dressed and cut to a stable gradient for control of surface soil erosion jute fabric to be laid with overslaps of 100mm crosswise and 300 mm longitudinally duly secured by U shaped m.s staples (11 gauge)/round head country nail of 150mm length at an interval of 750mm as per direction of the engineer-in-charge. (Rates F.O.R Guwahati)	sq.m	45.00
16.8		**Crushed Cement Concrete** Sub-base/Base (Breaking and crushing of material obtained by breaking damaged cement concrete slabls to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabls at a lead of 10km, laying and compacting the same as sub base/base course, constructed as WBM to cl. 404 except the use of screening or binding material.	cum	302.00

TOP END

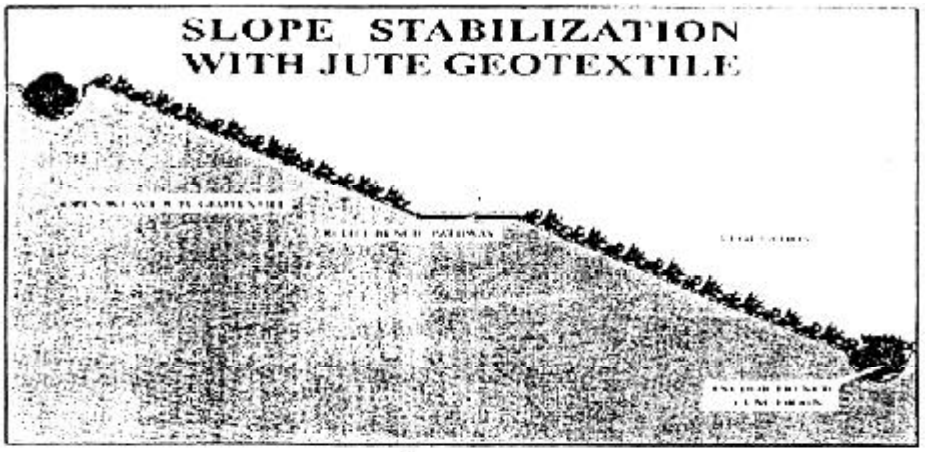


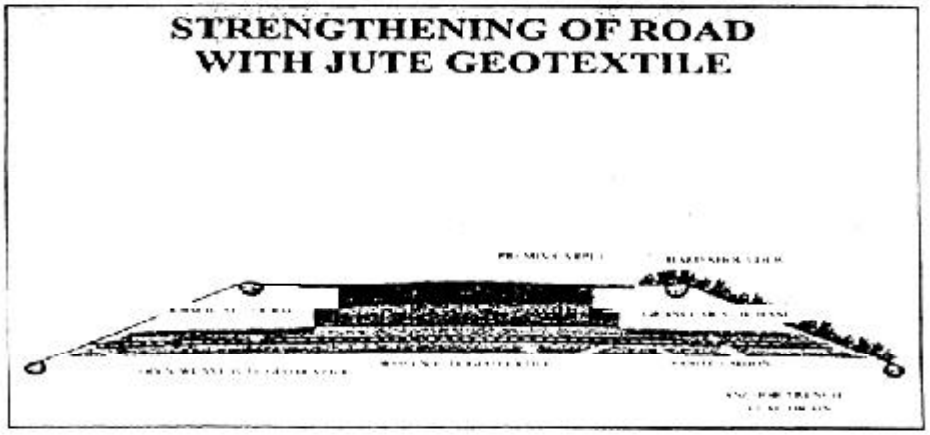
PLACEMENT OF JUTE NETTING



.. OVERLAPPING OF JUTE NETTING

Method of using JGT in major soil-related applications





Laying of JGT

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.9		Penetration Coat Over Top Layer of Crushed Cement Concrete Base (Spraying of bitumen over cleaned dry surface of crushed cement concrete base at the rateof 25 kg per 10 sqm by a bitumen pressure distributor, spreading of key aggregates at the rate of 0.13 cum per 10 sqm by a mechanical gritter and rolling the surface as per 506.3.8.	cum	30.00
16.10		Semi-Dense Bituminous Concrete (Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an averge output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5% of mix and filler transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the reqd. grade, lavel and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoSRT&H cl. no. 508. complete in all respect.		
		A With hydrated lime/cement as filler (refer table 500-9 of MoSRT&H specification)		
		(i) with 60/70 or VG-30 grade bitumen **for Grading I (13 mm nominal size)**	cum	8352.00
		for Grading II (10 mm nominal size)	cum	8885.00
		(ii) with Polymer modified bitumen 70		
		(i) **for Grading I (13mm nominal size)**	cum	10326.00
		(ii) for GradingII (10mm nominal size)	cum	11078.00
		0(iii) with CRMB 55		
		(i) **for Grding I (13mm nominal size)**	cum	8619.00
		(ii) for Grding II (10mm nominal size)	cum	9181.00
		B With rockdustas filler (refer table 500-9 of MoSRT&H specification) (i) with 60/70 or VG-30 grade bitumen **for Grading I (13 mm nominal size)**	cum	8077.00
		for Grading II (10 mm nominal size)	cum	8610.00
		(ii) with Polymer modified bitumen 70 **for Grading I (13 mm nominal size)**	cum	10051.00
		for Grading II (10 mm nominal size)	cum	10803.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		(iii) with CRMB 55 **for Grading I (13 mm nominal size)**	cum	8344.00
		for Grading II (10 mm nominal size)	cum	8906.00
		C With hydrated lime/cement as filler (refer table 500-9 of MoSRT&H specification) & anti stripping agenet as per IS:14982 (Refer Appendix-5 of MoSRT&H specification) (i) with 60/70 or VG-30 grade bitumen **for Grading I (13 mm nominal size)**	cum	8651.00
		for Grading II (10 mm nominal size) (ii) with Polymer modified bitumen 70	cum	9217.00
		for Grading I (13 mm nominal size)	cum	10624.00
		for Grading II (10 mm nominal size)	cum	11410.00
		(iii) with CRMB 55 **for Grading I (13 mm nominal size)**	cum	8917.00
		for Grading II (10 mm nominal size)	cum	9513.00
		D With rock dust as filler (refer table 500-9 of MoSRT&H specification) & anti stripping agent as per IS:14982 (Refer Appendix-5 of MoSRT&H specification) (i) with 60/70 or VG-30 grade bitumen **for Grading I (13 mm nominal size)**	cum	8376.00
		for Grading II (10 mm nominal size) (ii) with Polymer modified bitumen 70	cum	8942.00
		for Grading I (13 mm nominal size)	cum	10349.00
		for Grading II (10 mm nominal size)	cum	11134.00
		(iii) with CRMB 55 **for Grading I (13 mm nominal size)**	cum	8675.00
		for Grading II (10 mm nominal size)	cum	9238.00
		E **Using Cold mix Binder (as per IRC:SP:100-2014) All in 1 and by credible technology partners duly licensed by CRRI** for Grading I (13 mm nominal size)	cum	10670.00
		for Grading II (10 mm nominal size)	cum	10832.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.11	519	Cold Mix binder (including Gravel Emulsion) (as per IRC:SP:100-2014) All in 1 by credible technology partners duly licensed by CARI. Providing, laying and rolling of bituminous cold mix on prepared base consisting of a mixture of unheated mineral aggregate and emulsified bitumen (All in 1), including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing to specified grades and levels. Using bitumen emulsion and 9.5 mm or 13.2 mm nominal size aggregate	cum	11848.00
		Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate	cum	11980.00
		Using bitumen emulsion and 9.5 mm or 13.2 mm nominal size aggregate	cum	8328.00
		Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate	cum	8433.00
16.12	516	**Slurry Seal** Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion (CSS-2) or Tailor made and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to (i) 5 mm thickness	sqm	73.00
		(ii) 3 mm thickness	sqm	50.00
		(iii) 1.5 mm thickness	sqm	31.00
16.13	518	**Fog Spray** Providing and applying low viscosity bitumen emulsion (CSS-1/CSS-1h) or Tailor made for sealing crack less than 3mm wide on incipient frepping for dis integration in existing surfacing. (I) With Bitumen emulsion CSS-1 (IS:8887-2004)		
		(I) without blinding	sqm	39.00
		(ii) Extra for blinding the fog sprary	sqm	5.00
		(II) With bitumen emulsion-CSS-1h (I) without blinding	sqm	41.00
		(ii) Extra for blinding the fog spray	sqm	5.00
16.14	510	**Surface Dressing** (Providing and laying surface dressing as wearing course in single coat using crushed stone aggregates of specified size on a		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
layer of bitu	minous binder	laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller) (Including cost of testing of materials at site and laboratory as directed by the deptt.) **(a) Without anti stripping agent** **(ii) with bitumen emulsion (CRS-2)** : 19mm nominal chipping size	sqm	88.00
		13 mm nominal size chipping	sqm	73.00
		(b) With anti stripping agent as per IS:14982 (Refer Appendix-5 of MoSRT&H specification) **(a) Without anti stripping agent** **(ii) with bitumen emulsion (CRS-2)** : 19mm nominal chipping size	sqm	88.00
		13 mm nominal size chipping	sqm	68.00
16.15	3004.3.3	**Crack Filling** (Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm)	metre	4.00
16.16		**Seal coat with Cold mix Binder**-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. With cold mix Binder (As per IRC:SP:100-2014) and through credible technology partners duly licensed by CRRI. **By manual means**		
		Case-1: Type A (11.2mm to 2.36mm) **Bitumen Emulsion (RS-2)**	sqm	75.00
		Case-II: Type B (2.36mm to 180 micron) **Bitumen Emulsion (RS-1)**	sqm	52.00
		Case-III: Type-C (9.5 mm to 2.36 mm) **Bitumen Emulsion (RS-2)**	sqm	60.00
		By mechanical means Case-1: Type A (11.2mm to 2.36mm) **Bitumen Emulsion (RS-2)**	sqm	74.00
		Case-II: Type B (2.36mm to 180 micron) **Bitumen Emulsion (RS-1)**	sqm	54.00
		Case-III: Type-C (9.5 mm to 2.36 mm) **Bitumen Emulsion (RS-2)**	sqm	63.00
16.17		**Geosynthetics and Reinforced Earth** 'Sub-Surface Drain with Geotextile: Construction of subs urface drain 200 mm dia using geotextiles	metre	1205.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		treated with carbon black with physical properties as given in clause 702.2.3 formed in to a stable network and a planar geocomposite structure, joints wrapped with geotextile to prevent ingress of soil all as per clause 702 and approved drawing including excavation and back filling.		
16.18		**Narrow Filter Sub-Surface Drain :** 'Construction of a narrow filter sub-surface drain consisting of porous or perforated pipe laid in narrow trench surrounded by a geotextile filter fabric, with a minimum of 450 mm overlap of fabric and installed as per clause 702.3 and 309.3.5 including excavation and backfilling.	metre	929.00
16.19		**Laying Paving Fabric Beneath** a Pavement Overlay :	sqm	438.00
		Providing and laying paving fabric with physical requirements as per table 704-2 over a tack coat of paving grade Bitumen 80-100 penetration, laid at the rate of 1 kg per sqm over thoroughly cleaned and repaired surface to provide a water resistant membrane and crack retarding layer. Paving fabric to be free of wrinkling and folding and to be alaid before cooling of tack coat, brooming and rolling of surfaces with pneumatic roller to maximise paving fabrics contact with pavement surfaces.		
16.20		**Laying Boulder Apron in Crates of Synthetic**	cum	1068.00
		Geogrids : Providing, preparing and laying of geogrid crated apron 1m × 5m, 600 mm thick including excavaton and backfilling with baffles at 1 metre interval, made with geogrids having characteristics as per clause 704.2, joinng sides with connectors/ring staple, top corners to be tie tensioned, placing of suitble crioss inteval ties in layers of 300 mm connecting opposite side with lateral braces and tied with polymer braids to avoid bulging, constructed as per clause 704.3 filled with stone with minimum size of 200 mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundationrecess in case of sloping ground and laid over a layer of Geotextile to prevent migration of fines, all as per clause 704 and laid as per clause 2503.3 and approved design.		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.21		**Reinforced Earth Retaining Wall** (Reinforced earth retaining walls have four main components as under : a) Excavation for foundation, foundation concrete and cement concrete grooved seating in the foundation for facing elements (facia material). b) Facia material and its placement. c) Assembling, joining with facing elements and laying of the reinforcing elements. d) Earth fill with granular material which is to be retaned by the wall.		
		(i) Facing elements of RCC	Sqm	2239.00
		(ii) Assembling, joining and laying of reinforcing elements. A With reinforcing element of steel / Aluminium strips/polymeric strips Type 1 1. Galvanised carbon steel strips	metre	316.00
		Type 2 2. Copper Strips	metre	1467.00
		Type 3 3. Aluminium Strips	metre	628.00
		Type 4 4. Stainless steel strips	metre	840.00
		Type 5 5. Glass reinforced polymer/fibre reinforced polymer/polymeric strips	metre	840.00
		B 5. With reinforcing elements of synthetic geogrids	sqm	494.00
16.22		**Sub-Grade Stabilization:** **(A) Providing and laying one layer** of Non-Woven geotextile of minimum mass per unit area of 280gms/sqm. having minimum roll width of 5.0m treated with carbon black with physical properties as given in clause no 702.2.3 over 25mm thick compacted sand layer on a prepared subgrade as a filter media with necessary overlaps as per drawing and technical specification and as directed by the Engineer in charge complet.	sqm	139.00
16.23		**(B) Providing and laying one layer** of Biaxial P.V.C. Knitted coated polyster Geogrid of unit roll width of 5.0m having minimum tensile strength of 40KN/m in both direction at a maximum elongation of 15% in th direction of the length of the roll and satisfying all requirements of IS Code/BIS code of practice and tests prescribed in ASTM or British standards or ISO on prepared subgrade as a seperator cum reinforceing agent with necessary	sqm	205.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		overlaps as per drawing and technical specification and as directed by the Executive Engineer in charge complete.		
16.24	408	**Safety devices** **Cast in Situ Cement Concrete** M20 kerb (Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerbe stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause		
		A Using Concrete Mixer	metre	335.00
		B Using Concrete Batching and Mixing Plant	metre	341.00
16.25		**Cast in Situ Cement Concrete** M 20 Kerb with Channel (Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grad, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete manually all complete as per clause 408)		
		A Using Concrete Mixer	metre	631.00
		B Using Concrete Batching and Mixing Plant	metre	642.00
16.26		**Reinforced Cement Concrete** Crash Barrier (Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bar 25mm dia, 450mm long at expansion joints filled with pre moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclouser to MOST circular No. RW/NH-33022/1/94-DO III dated June 1994 as per dimension in the approved drawing and at locations directed by the engineer, all as specified.		
		M 20 grade concrete	metre	4397.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.27	810	**Metal Beam Crash Barrier** A. Type-A, "W" : Metal Beam Crash Barrier (Providing and erecting a "W' metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 × 75 × 5 mm spaced 2m centre to center, 1.8 m high, 1.1m below ground/road level, all steel parts and fitments to be galvanized by hot dip process, all fitting to conform to IS:1367 and IS:1364, metal beam rail to be fixedon the vertical post with a spacer of channel section 150mm × 75 mm × 5mm, 330mm long complete as epr clause 810.)	metre	3623.00
16.28		B **Type-B, "Thrie" : Metal Beam Crash Barrier** (Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above raod/ground level, fixed on ISMC series channel vertical post, 150 × 75 × 5 mm spaced 2m center to center, 12 m high, 1.15 m below ground level, all steel parts and fitments to be galvanized by hot dip process, all fitting to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150mm 75mm × 5mm, 546mm long complete as per clause 810)	metre	5103.00
16.29		**Portable Barricade in Construction Zone** (Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' fram made with 45 × 45 × 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150mm in width at an angle of 450, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001.	each	3372.00
16.30		**Permananent Type Barricade in Construction Zone** With Steel Components (Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 × 50 × 5 mm angle iron vertical support, painted with yellow and white strips 150mm in width at an angle of 450, complete as per IRC:SP:55-2001.	each	5437.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.31		**Drum Delineator in construction Zone** (Provision of metal drum/empty bitumen drum delineator, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferential strips of alternate black and white 100 mm wide fitted with reflector 3 Nos of 7.5 cm dia, all as per IRC:SP:55-2001.	each	346.00
16.32		**Lighting on Bridges** (Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp)	each	19072.00
16.33		**Tree reflector** made of height intesity grade rtro-reflectorised sheeting fixed over aluminium sheeting of 2mm/0.28mm thick firmly fixed with necessary galvanized nail.		
		a) 100mm dia/100mm × 100mm.	each	78.00
		b) 150mm dia/150mm × 150mm	each	110.00
10.34		**Providing reflective pavement marker** with Micro prismatic lens in both direction having theremoplastic body adhering to the specification and guidelines of MoSRT&H's fixed to the road surface using the adhesives and the procedures recommended by the manufacturers with three months replacement warranty and free maintenance.	each	249.00
16.35		**Providing and fixing lane divider** with dimensions 220 × 150 × 285mm base plate 25mm high two-way reflective with 1 or 2 × 128 glass elements rubber flag with 2 round glass reflectors	Each	975.00
16.36	307	**Bio engineering measure in slope stabilization and protection** Spreading of Sludge Farm Yard Manure or/and good Earth (Spreading of sludge farm yard manureor/and good earth in required thickness (cost of sludge, farm-yard manure or/and good earth to be paid for separately)	cum	15.00
16.37	307	**Grassing with 'Doobs' Grass** (Grassing with 'Doobs' grass includingwatering and maintenance of the lawn for 30 days or more till the grass froms a thick lawn free from weeds and fit for moving including supplying good earth it needed)		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		(i) In rows 15 cm apart in either direction	sqm	28.00
		(ii) In rows 7.5 cm apart in either direction	sqm	51.00
16.38	307	**Planting of Trees and their Maintenance** for three Year (Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/ sludge mannure, planting the saplings, backfilling the trenches, watering, fixing the tree guatrd and maintaining the plants for three year.	each	660.00
16.39		**Compensatory Afforestation** (Planting trees as compensatory afforestation at the rate of 290 trees per hectare at a spacing of 6 m by grubbing and leveling the ground upto a depth of 150mm, digging holes 0.9 m dia. 1 m deep, mixing farm yard/sludge manure with soil, planting of sapling 2m high with 25cm dia stem, backfilling the hole and watering.	hectare	100173.00
16.4		**Providing approaved variety** of vetiver plantation certified by The Vetiver Network International (TVNI) or its affiliate in India including pouching of tiller with selected soil for agricultural use mixed with farmyard manure in 8" × 6" poly pouch, maintaining the pouched plants for at least 1 (one) month with application of growth promoter, fertilizer, watering, weeding etc. dressing of the area of plantation, planting the pouched plants as per design approved by The Vetiver Network International (TVNI) or its affiliate in India. (Excluding jungle clearance, earth work in trimming, cutting, filling etc.) and Maintenance of the vetiver plants by watering, pruning, weeding, mulching, application of manure, fertilizer, growth promoter etc. for 4 (four) months after completion of plantation.		
		Part-1 Plantation Part	metre	82.00
		Part-II Maintenance part	metre	28.00
16.41		**Construction fo cold weather Bamboo bridge**	Rm	12814.00
		overall width of 3.70m and clear road way 3m with jungle wood post 20cm to 25cm dia 5nos. In each rows and rows being 2.1m. aprt except for the navigable span which should be 3m. Post to be driven atleast 180cm. or more below ground level		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
including pr	oviding 20cm	to 25cm center to center and placed over 20 cm dia, jungle wood dham, 15 cm dia. jungle wood bracing collar fixed by bolts and nuts, straps etc. mature bholuka Bamboo cross growth all closely packed and tied 75cm wide track way made from 38mm thick 1st class local plank fixed on 75cm wide track way made from 38mm thick 1st class local plank fixed fixed on 75mm × 100mm first class local wood battens 120cm apart and 3 lines of jati bamboo horizantal railing fixed in bholuka bamboo post placed at 210 cm apart and white washed including all necessary nuts and bolts, coir ropes, struts, nails etc. complete with a layer of brushwood to exposed portion out-side trackway with earth topping complete as per direction of the department.		
16.42		**Making 120cm wide bamboo foot bridge with** 100mm Bholuka or Barua bamboo posts driven 120 cm to 180 cm underground 3 Nos. in each row and rows being 3m apart bholuka or Barua bamboo dham placed over the posts and tied with cane or wire, Bholuka or baura bamboo struts in each row both up and down stream, jati bamboo long gorhs closely packed and tied with dham. Single layer of mat placed over 75mm thick brush wood and tied with bholuka or Barua bamboo rail stand fixed in one side of the bridge etc. comple.	Rm	973.00
16.43		**Timber Bridge** **Supplying and driving sal** piles 25cm to 30cm dia. Dressed to heart wood incluidng making length in every 30cm interval, coal tarring two (2) coats with best tar applied hot (Rate inclusive of the cost of the required quantity fo tar.) (a) With Road monkeyand crab winch Portion of pile actually driven underground	meter	5741.00
		Portion of pile remaining above ground (b) Using labour	meter	5602.00
		Portion of pile actually driven underground	meter	5490.00
		Portion of pile remaining above ground	meter	5398.00
16.44		**Supplying and driving** Azar/Nahar/Nageswar/Zarul piles 25cm to 30cm dia. Dressed to heart wood		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
including making length in		every 30 cm interval, coal tarring two (2) coats with best tar applied hot (Rate inclusive of the cost of the required quantity of tar.)		
		(i) With Road monkeyand crab winch		
		Portion of pile actually driven underground	meter	4846.00
		Portion of pile remaining above ground	meter	4706.00
		(ii) Using labour		
		Portion of pile actually driven underground	meter	2147.00
		Portion of pile remaining above ground	meter	1934.00
		Portion of pile remaining above groun.		
16.45		Sal Wood work including supplying, fitting and fixing complete with necessary M.S. bolts, nuts, nails, screw etc. and coal tarring two (2) coats with best tar applied hot (Rate is inclusive of the cost of the required quantity of tar)		
		Underssed wood work in floor planks, collars, bracing, standards, wheel guards, struts and railings, runner belts, rail, posts etc.	cum	30732.00
16.46		In track way planks (alternate nailing to be done with decking in a seggragate way.)	cum	30445.00
16.47		**Azar or Nahar or Nageswar** or zarul of sundi or gamari wood works including supplying, fitting, and fixing complete with necessary M.S. bolts, nuts, nails scerws etc. and coal tarring two coats with best tar applied hot (Rate is inclusive of the cost of the required quantity of tar.)		
		(i) Undressed in floor planks, collars, bracing, standards, wheel guards, struts and railings, runner belts, rail, posts etc	cum	22427.00
		(ii) In track way planks (alternate nailing to be done with decking in a seggragate way)	cum	21129.00
16.48		**Supplying, fitting and fixing timber** beam and bearing beam rectangular in size fitted with M.S. etc. supplying spikes etc. as necessary and coal tarring two (2) coats with best tar applied hot as directed (Rate is inclusive of cost of the required quantity of tar.)		
		(i) Using Sal Timber	cum	31202.00
		(ii) Using Azar or Nahar or Nahar or Nageswar or Zarul Sawn timber	cum	25475.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.49		**Supplying, fitting and fixing** 25 cm to 30 cm dia. sal wood log beam dressed to heartwood including supplying and fixing with 20mm dia M.S. bolts and nuts etc. including coal tarring two (2) coats with best tar applied hot as directed (Rate is inclusive of cost of the required quantity of tar.)	meter	6304.00
16.5		**Supplying, fitting and fixing Azar or Nagar or** nageswar or Zarul sawn timber beam and bearing beam rectangular in size fitted with MS cleats, straps etc. supplying spikes etc. as necessary and coal taring two coats with best tar applied hot as directed (Rate is inclusive of cost of the required quantity if tar)	meter	5401.00
16.51		L**abour for scarfing and joining piles** 25 cm to 30 cm dia Dressed to heartwood 90 cm. In length including supplying, fitting and fixing wit 2 nos. of 50 mm × 10mm MS FI clamps and 16 mm dia MS bolts and nuts etc. complete as directd.	each Joints	1123.00
16.52		**Labour for taking out old piles of the bidge** and stacking them at suitable place as directed	each	1052.00
16.53		**Labour fro dismanteling all members** of the timber bridge (except piles) and stacking them at sutiable places as directed (all members will be under custody of the contractor till taken over by the department)	meter	850.00
16.54		**labour for driving piles** 25 cm to 30 cm dia Dressed to heartwood marking length in every 30 cm. interval including coaltering two (2) coats with best tar applied hot including providing necessary scaffolding or staging (rate is inclusive of the cost of required quantity of tar.)		
		(a) With Rod monkeyand crab which		
		(i) Portion of pile actually driven under ground	meter	516.00
		(ii) Portion of pile remaining over ground	meter	377.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		(b) By use of labour		
		(i) Portion of pile actually driven undr ground	meter	693.00
		(ii) Portion of pile remaining over ground	meter	459.00
16.55		**Labour for fitting and fixing** RSJ beam, Cl saddle etc. in position including necessary scaffolding, cutting them to required size, drilling holes and supplying and fixing necessary bolts and nuts, painting two coats complete (Tar-paints to be supplied by the contractor at his own costs) including carrying from PWD Godown.	Qunital	584.00
16.56		**Labour for fitting and fixing** RSJ beam, Cl saddle etc. in position including necessary scaffolding, and fixing necessary bolts and nuts, painting two coats complete (Tar/Steel/paints to be supplied by the contractor at his own costs)	Qunital	514.00
16.57		**Labour for making and fitting** MS F.I. Straps and cleats etc. in position including driling holes and carrying the same from PWD godown	Qunital	1355.00
16.58		**Labour for making** "U" shapeed flat iron strap 0.5m × 0.3m size from 150mm × 12mm size MS flat including providing 10 bolts holes and fitting with 0.35m long 20mm dis MS bolts including fitting tightly withbearing beam, pile and RSJ beams etc. as directed by the Department.	Each	1334.00
16.59		**Labour for fitting woodwork** including sizing, supplying and fixing with new MS bolts, nut, nails, spikes, and coal tarring applied hot (Coal tar to be supplied by the contractor at his own costs) including carrying from the PWD godown.		
		(a) Applying 2 (two) coats	cu.m	1675.00
		(b) Applying 1 (one) coats	cu.m	1350.00
16.60		**Labour for fitting and fixing** 25cm to 30cm dia log beam including supplying and fixing necessary MS nuts and bolts etc. and coal tarring coats applied hot as directed (coal tar to be supplied by the contractor at his own cost)		
		(a) Applying 2 (two) coats	meter	402.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		(b) Applying 1 (one) coats	meter	238.00
16.61		**Labour for talking out old woodworks** of bridge and the refitting the same including supplying and fixing necessary new MS bolts, nuts, spikes, nail as directed (Coal tar to be supplied by the contractor at his own costs.)	cum	2554.00
16.62		**Labour for talking out old woodworks** of bridge and the refitting the same including supplying and fixing necessary new MS bolts, nuts, spikes, nail etc and coaltering on cost applied hot as directed (Coal tar to be supplied by the contractor at his own costs.)	cum	227.00
16.63		**Pile shoes :** supplying fitting and fixing the pile shoes made of 6mm thick mild steel plate with necessary welding joints, size of pile shoe will be 78.54 cm (circumferential length of at top) × 50cm (Depth) × 5cm (circumferential length at bottom) and inside 25cm inside diameter at top, including fitting and fixing 39 Three) nos. M.s. plate of size of 6mm × 50mm, length 45cm at top of the pile shoe with necessary welding and drilling three nos of holes in each plate including fitting and fixing the pile shoes at the pile end with necessary patent nails etc., complete as directed by the Department. The pile shoe should be camphered to fit the pile shoe properly with necessary grooving for placing the MS plates and pile shoe.	Each	1050.00
16.64		**Making subway 3 M wide including** providing banner & sign board and lamp etc. During construction of Bridge.	RM	15562.24
		a) Labour for spreading gravel	cum	112.00
		b) Labour for spreading Sand gravel	cum	62.00
16.65		**Plum concrete work** with 40% plum hard blasted Boulder of 150mm to 200mm size filled interstices with 60% of cement concrete in proportion 1:3:6 of 10mm to 40mm size stone aggregates including shuttering, curing etc. complete as direct.	cum	216.00

FOUNDATIONS

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.66	304	**Excavation for Structures** (Early work in excavation of foundation of structures as per drawing and technical specification, including setting out construction of shoring bracing, removal of stamps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.		
		I. Ordinary soil		
		A. Manual Means		
		(I) Without dewatering		
		(i) upto 3 m depth	cum	86.00
		(ii) 3 m to 6 m depth	cum	113.00
		(iii) Above 6 m depth	cum	148.00
		(II) With dewatering		
		(i) upto 3 m depth	cum	100.00
		(ii) 3 m to 6 m depth	cum	127.00
		(iii) Above 6 m depth	cum	177.00
		B. Mechanical Means		
		(I) Without dewatering		
		(i) Depth upto 3 m	cum	56.00
		(ii) Depth 3 m to 6 m	cum	64.00
		(iii) Depth above 6 m	cum	77.00
		(II) With dewatering		
		(i) Depth upto 3 m	cum	59.00
		(ii) Depth 3 m to 6 m	cum	69.00
		(iii) Depth above 6 m	cum	84.00
		II. Ordinary rock (not requiring blasting)		
		A. Manual Means		
		(I) Without dewatering		
		Depth upto 3 m	cum	124.00
		(II) With dewatering		
		Depth upto 3 m	cum	143.00
		B. Mechanical Means		
		(I) Without dewatering		
		Depth upto 3 m	cum	72.00
		(II) With dewatering		
		(i) Depth upto 3 m	cum	82.00
		III. Hard rock (requiring blasting)		
		A Manual Means		
		(I) Without dewatering	cum	304.00
		(ii) With dewatering	cum	341.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		IV. Hard rock (blasting prohibited)		
		A. Mechanical Means		
		(i) Without dewatering	cum	420.00
		(ii) with dewatering	cum	478
		V. Marshy soil		
		(i) upto 3 m depth		
		A. Manual means		
		(i) Without dewatering	cum	367.00
		(ii) With dewatering	cum	428.00
		B. Mechanical Means		
		(i) Without dewatering	cum	124.00
		(ii) with dewatering	cum	145.00
		VI. Back Filling in Marshy Foundation Pits	cum	274.00
16.67	304	Filling Annular space Around Footing in Rock (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per items 12.4)	cum	5650.00
16.68	304	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1331.00
16.69	2100	RCC 1:3:6 in Foundation (Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40mm nominal size mechanically mixed, placed in foundation and compcted by vibration including curing for 14 days)	cum	5650.00
16.70	1300	Brick masonry work in cement mortar 1:3 in foundation complete excluding pointing and plastering, as per drawing and technical specifications	cum	5824.00
16.71		A. Cement mortar 1:3 (cement : 3 sand)	cum	4974.00
		B. Cement mortar 1:2 (cement : 2 sand)	cum	6164.00
		C. Cement mortar 1:4 (cement : 4 sand)	cum	4183.00
		D. Cement mortar 1:6 (cement : 6 sand)	cum	3436.00
16.72	1400	Stone masonry work in cement mortar 1:3 in foundation complete as drawing and Technical Specification		
		(a) Square Rubble Coursed rubble masonry (first sort)	cum	3905.00
	1405.3	(b) Random Rubble Masonry	cum	3716.00
16.73	1500, 170	Plain/Reinforced cement concrete, in open foundation complete as per drawing and technical specification including steel shuttering framework **(N) Without plasticiser**		
		A. PCC Grade M15	cum	6010.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		B. PCC Grade M20	cum	6821.00
		C. (I) RCC Grade M20		
		Case I Using concrete mixer	cum	6902.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8132.00
		D. PCC Grade M25		
		Case I Using concrete mixer	cum	7439.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8671.00
		E. RCC Grade M25		
		Case I Using concrete mixer	cum	7528.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8755.00
		F. RCC Grade M30		
		Case I Using concrete mixer	cum	7490.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8713.00
		G. RCC Grade M30		
		Case I Using concrete mixer	cum	7548.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8774.00
		H. RCC Grade M35		
		Case I Using concrete mixer	cum	7686.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8906.00
	1500, 1700 & 2100	**(P) With plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerting plasticiser (Masterplast ACPL or equivalent) conforming to IS-9103-1999.**		
		A. PCC Grade M15	cum	6769.00
		B. PCC Grade M20	cum	7769.00
		C. (I) RCC Grade M20		
		Case I Using concrete mixer	cum	7859.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9089.00
		D (I) RCC Grade M25		
		Case I Using concrete mixer	cum	8548.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9781.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		E. (I) RCC Grade M25		
		Case I Using concrete mixer	cum	8647.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9874.00
		F. (I) RCC Grade M30		
		Case I Using concrete mixer	cum	8612.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9834.00
		G. (I) RCC Grade M30		
		Case I Using concrete mixer	cum	8674.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9900.00
		H. (I) RCC Grade M30		
		Case I Using concrete mixer	cum	8849.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10069.00
16.74	1200	Providing an dconstructing temporary island 16 m diameter for construction of well foundation for 8m dia well.		
		A Assuming depth of water 1.0 m and height of island to be 1.25m	each	41153.00
		B Assuming depth of water 4.0 m and height of island 4.5m	each	695113.00
		C Providing and constructing one span service road to reach island location from one pier location to another pier location	metre	2258.00
16.75	1200 & 1900	Providing and laying cutting edge of ild steel weighing 40 kg per metre for well foundation complete as per drawing and technical specification.	tonne	103102.00
16.76	1200, 1500 & 1700	Plain/Reinforced cement concrete, in well found-ation complete as per drawing and technical specification including steel shuttering formwork.		
		(N) Without plasticiser		
		A. Well curb		
		(i) **RCC M20 Grade**		
		Case I Using concrete mixer	cum	7965.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9416.00
		(ii) **RCC M25 Grade**		
		Case I Using concrete mixer	cum	8708.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10158.00
		(iii) **RCC M30 Grade**		
		Case I Using concrete mixer	cum	8751.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10205.00
		(iv) **RCC M35 Grade**		
		Case I Using concrete mixer	cum	8956.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10408.00
		B. Well steining		
		(i) **PCC M15 Grade**	cum	6483.00
		(ii) **PCC M20 Grade**	cum	7215.00
		(iii) **RCC M20 Grade**		
		Case I Using concrete mixer	cum	7302.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8631.00
		(iv) RCC M25 Grade		
		Case I Using concrete mixer	cum	7888.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9156.00
		(v) RCC M25 Grade		
		Case I Using concrete mixer	cum	7982.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9312.00
		(vi) RCC M30 Grade		
		Case I Using concrete mixer	cum	7962.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9289.00
		(vii) RCC M30 Grade		
		Case I Using concrete mixer	cum	8022.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9355.00
		(viii) RCC M35 Grade		
		Case I Using concrete mixer	cum	8210.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9541.00
		(ix) RCC M40 Grade (With Batching Plant, Transit Mixer and Concrete Pump	cum	9609.00
		C. Bottom Plug		
		(i) PCC Grade M20		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		Case I Using concrete mixer	cum	7353.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8387.00
		(ii) PCC Grade M25		
		Case I Using concrete mixer	cum	7676.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8723.00
		(iii) PCC Grade M30		
		Case I Using concrete mixer	cum	7763.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8797.00
		(iv) PCC Grade M35		
		Case I Using concrete mixer	cum	7926.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8956.00
		D. Intermediate plug		
		(i) Grade M20 PCC		
		Case I Using concrete mixer	cum	7025.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8073.00
		(ii) Grade M25 PCC		
		Case I Using concrete mixer	cum	7350.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8394.00
		(iii) Grade M30 PCC		
		Case I Using concrete mixer	cum	7416.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8464.00
		E. Top plug		
		(i) Grade M15 PCC		
		Case I Using concrete mixer	cum	5893.00
		(ii) Grade M20 PCC		
		Case I Using concrete mixer	cum	6559.00
		(iii) Grade M25 PCC		
		Case I Using concrete mixer	cum	7171.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8324.00
		(iv) Grade M30 PCC		
		Case I Using concrete mixer	cum	7238.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8444.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		F. Well cap		
		(i) RCC M20 Grade		
		Case I Using concrete mixer	cum	6833.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8062.00
		(ii) RCC M25 Grade		
		Case I Using concrete mixer	cum	7528.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8757.00
		(iii) RCC M30 Grade		
		Case I Using concrete mixer	cum	7548.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8773.00
		(iv) RCC M35 Grade		
		Case I Using concrete mixer	cum	7686.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8906.00
		(v) RCC M40 Grade	cum	9054.00
	1200, 1500 & 1700	**(P) With plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplast ACPL or equivalent) conforming to IS-9103-1999**		
		A. Well curb		
		(i) RCC M20 Grade		
		Case I Using concrete mixer	cum	8964.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10415.00
		(ii) RCC M25 Grade		
		Case I Using concrete mixer	cum	9799.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	11250.00
		(iii) RCC M30 Grade		
		Case I Using concrete mixer	cum	9853.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	11305.00
		(iv) RCC M35 Grade		
		Case I Using concrete mixer	cum	10098.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	11550.00
		B. Well steining		

Item No.	Ref. of MORT&H	Descriptions		Unit	Rate
		(i)	PCC M15 Grade	cum	7399.00
		(ii)	PCC M20 Grade	cum	8131.00
		(iii)	RCC M20 Grade		
		Case I	Using concrete mixer	cum	8217.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	9547.00
		(iv)	**RCC M25 Grade**		
		Case I	Using concrete mixer	cum	8879.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10214.00
		(v)	**RCC M25 Grade**		
		Case I	Using concrete mixer	cum	8982.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10312.00
		(vi)	**RCC M30 Grade**		
		Case I	Using concrete mixer	cum	8967.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10294.00
		(vii)	**RCC M30 Grade**		
		Case I	Using concrete mixer	cum	9032.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10363.00
		(viii)	**RCC M35 Grade**		
		Case I	Using concrete mixer	cum	9256.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10588.00
		(ix)	**RCC M40 grade**	cum	10874.00
		C	**Bottom Plug**		
		(i)	**PCC Grade M20**		
		Case I	Using concrete mixer	cum	8383.00
		Case II	With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	9416.00
		(ii)	**PCC Grade M25**		
		Case I	Using concrete mixer	cum	8815.00
		Case II	With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	9844.00
		(iii)	**PCC Grade M30**		
		Case I	Using concrete mixer	cum	8902.00
		Case II	With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	9936.00
		(iv)	**PCC Grade M35**		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		Case I Using concrete mixer	cum	9104.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	10133.00
		D Intermediate plug		
		(i) Grade M20 PCC		
		Case I Using concrete mixer	cum	7852.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	8900.00
		(ii) Grade M25 PCC		
		Case I Using concrete mixer	cum	8250.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	9293.00
		(iii) Grade M30 PCC		
		Case I Using concrete mixer	cum	8329.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	9401.00
		E. Top plug		
		(i) Grade M15 PCC		
		Case I Using concrete mixer	cum	6726.00
		(ii) Grade M20 PCC		
		Case I Using concrete mixer	cum	7392.00
		(iii) Grade M25 PCC		
		Case I Using concrete mixer	cum	8072.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	9285.00
		(iv) Grade M30 PCC		
		Case I Using concrete mixer	cum	8152.00
		Case II With Batching Plant, Transit Mixer and Crane/Concrete Pump	cum	9358.00
		F. Well cap		
		(i) RCC Grade M20		
		Case I Using concrete mixer	cum	7774.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9001.00
		(ii) RCC Grade M20		
		Case I Using concrete mixer	cum	8647.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9877.00
		(iii) RCC Grade M20		
		Case I Using concrete mixer	cum	8674.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9899.00
		(iv) RCC Grade M20		
		Case I Using concrete mixer	cum	8849.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10069.00
		(v) RCC M40 Grade Using Batching Plant, Trasit Mixer and Concrete Pump	cum	10253.00
16.77	1200	**Sinking of 6m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is rekonewed from bed level.		
		A Sandy soil		
		(i) Depth below bed level upto 3.0 M	metre	4394.00
		(ii) Beyond 3m upto 10m depth	metre	6404.00
		(iii) Beyond 10m upto 20m	metre	8458.00
		(iv) Beyond 20m upto 30m		
		a For sinking	metre	15864.00
		b For sinking including kentledge	metre	19037.00
		(v) Beyond 30m upto 40m		
		a For sinking	metre	37691.00
		b For sinking including kentledge	metre	45230.00
		B Clayey soil (6m dia. Well)		
		(i) Depth below bed level upto 3.0 m	metre	6406.00
		(ii) Beyond 3m upto 10m depth	metre	13687.00
		(iii) Beyond 10 m upto 20 m		
		a For sinking	metre	18076.00
		b For sinking including kentledge	metre	18980.00
		(iv) Beyond 20m upto 30 m		
		a For sinking	metre	33907.00
		b For sinking including kentledge	metre	42383.00
		c For sinking including kentledge & dewa-tering if required	metre	44503.00
		(v) Beyond 30m upto 40m		
		a For sinking	metre	80558.00
		b For sinking including kentledge	metre	96670.00
		c For sinking including kentledge & dewa-tering if required	metre	101503.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		C. Soft rock (6m dia well)		
		(i) Depth of soft rock strata upto 3m	metre	15364.00
		D. Hard rock (6m dia well)		
		(i) Depth of soft rock strate upto 3m	metre	17805.00
16.78	1200	Sinking of 7 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, compete as epr drawing and technical specifications. Depth of sinking is rekonewed from bed level.		
		A. Sandy soil		
		(i) Depth below bed level upto 3.0 M	metre	6697.00
		(ii) Beyond 3m upto 10m depth	metre	9327.00
		(iii) Beyond 10m upto 20m	metre	12318.00
		(iv) Beyond 20m upto 30m		
		a For sinking	metre	23104.00
		b For sinking including kentledge	metre	27725.00
		(v) Beyond 30m upto 40m		
		a For sinking	metre	54891.00
		b For sinking including kentledge	metre	65869.00
		B. Clayey soil (7m dia. Well)		
		(i) Depth below bed level upto 3.0 M	metre	9327.00
		(ii) Beyond 3m upto 10m depth	metre	13861.00
		(iii) Beyond 10m upto 20m		
		a For sinking	metre	18306.00
		b For sinking including dewatering, if required, if required	metre	19221.00
		(iv) Beyon d20m upto 30m		
		a For sinking	metre	34336.00
		b For sinking including kentledge	metre	42920.00
		c For sinking including kentledge & dewa-tering if required	metre	45066.00
		(v) Beyond 30m upto 40m		
		a For sinking	metre	81576.00
		b For sinking including kentledge		97891.00
		c For sinking including kentledge & dewa-tering if required	metre	102786.00
		C. Soft rock (7m dia well)		
		(i) Depth of soft rock strata upto 3m	metre	14148.00
		D. Hard rock (7m dia well)		
		(i) Depth upto 3 m	metre	19824.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.79	1200	**Sinking of 8 m external diameter well** (other than pneumatic method of sinking) through all types of strats namely sandy soil, clayey soil and rock as shown against each case, complete as epr drawing and technical specifications. Depth of sinking is rekonewed from bed level		
		A. Sandy soil		
		(i) Depth below bed level upto 3.0 M	metre	8415.00
		(ii) Beyond 3m upto 10m depth	metre	10435.00
		(iii) Beyond 10m upto 20m	metre	13780.00
		(iv) Beyond 20m upto 30 m		
		a For sinking	metre	25848.00
		b For sinking including kentledge	metre	31017.00
		(v) Beyond 30m upto 40m		
		a For sinking	metre	61411.00
		b For sinking including kentledge	metre	73693.00
		B. Clayey soil (8m dia. Well)		
		(i) Depth upto 3.0 M	metre	11401.00
		(ii) Beyond 3m upto 10m depth	metre	14225.00
		(iii) Beyond 10 m upto 20 m		
		a For sinking	metre	18787.00
		b Adding for dewatering @5% of cost, if required	metre	19726.00
		(iv) Beyond 20m upto 30m		
		a For sinking	metre	35239.00
		b For sinking including kentledge	metre	44048.00
		c For sinking including kentledge & dewatering, if required	metre	46251.00
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	83722.00
		b For sinking including kentledge	metre	100467.00
		c For sinking including kentledge & dewatering, if required	metre	105490.00
		C. Soft rock (8m dia well)		
		(i) Depth in soft rock strata upto 3m	metre	15738.00
		D. Hard rock (8m dia well)		
		(i) Depth in hard rock strata upto 3 m	metre	19654.00
16.8	1200	**Sinking of 9 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as epr drawing		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
and technical specifications. Depth of sinking is rekonewed from bed level				
		A. Sandy soil		
		(i) Depth below bed level upto 3.0 M	metre	8476.00
		(ii) Beyond 3m upto 10m depth	metre	11469.00
		(iii) Beyond 10m upto 20m	metre	15148.00
		(iv) Beyond 20m upto 30 m		
		a For sinking	metre	28414.00
		b For 20% of cost for Kentledge including	metre	34097.00
		supports loading arrangement and Labour.		
		(v) Beyond 30m upto 40m		
		a For sinking	metre	67510.00
		b For skinking including kentledge	metre	81012.00
		B. Clayey soil (9m dia. Well)		
		(i) Depth below bed level upto 3.0 M	metre	11982.00
		(ii) Beyond 3m upto 10m depth	metre	15369.00
		(iii) Beyond 10 m upto 20 m		
		a For sinking	metre	20297.00
		b For sinking including dewatering. if required	metre	21312.00
		(iv) Beyond 20m upto 30m		
		a For sinking	metre	38073.00
		b For sinking including kentledge	metre	47591.00
		c For sinking including kentledge & dewa-	metre	49971.00
		tering, if required		
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	90458.00
		b For sinking including kentledge	metre	108550.00
		c For sinking including kentledge & dewa-	metre	113977.00
		tering, if required		
		C. Soft rock (9m dia well)		
		(i) Depth in soft rock strata upto 3m	metre	19294.00
		D. Hard rock (9m dia well)		
		(i) Depth in hard rock strata upto 3 m	metre	22682.00
16.81	1200	**Sinking of 10 m external diameter well** (other than		
		pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is rekonewed from bed level		
		A. Sandy soil		
		(i) Depth below bed level upto 3.0 M	metre	10361.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		(ii) Beyond 3m upto 10m depth	metre	12055.00
		(iii) Beyond 10m upto 20m	metre	15922.00
		(iv) Beyond 20m upto 30 m		
		a For sinking	metre	29866.00
		b For sinking including kentledge	metre	35839.00
		(v) Beyond 30m upto 40m		
		a For sinking	metre	70959.00
		b Adding 20% of cost for Kentledge including support loading arrangement and Labour etc.	metre	85150.00
		B. Clayey soil (10m dia. Well)		
		(i) Depth below bed level upto 3.0 M	metre	12915.00
		(ii) Beyond 3m upto 10m depth	metre	14821.00
		(iii) Beyond 10 m upto 20 m		
		a For sinking	metre	19574.00
		b Adding for dewatering @5% of cost, if required	metre	20553.00
		(iv) Beyond 20m upto 30m		
		a For sinking	metre	36719.00
		b For sinking including kentledge	metre	45899.00
		c For sinking including kentledge & dewa-	metre	48194.00
		tering, if required		
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	87239.00
		b For sinking including kentledge	metre	104687.00
		c For sinking including kentledge & dewa-tering, if required	metre	109922.00
		C. Soft rock (10m dia well)		
		(i) Depth in soft rock strata upto 3m	metre	20675.00
		D. Hard rock (10m dia well)		
		(i) Depth in hard rock strata upto 3 m	metre	27125.00
16.82	1200	**Sinking of 11 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is rekonewed from bed level		
		A. Sandy soil		
		(i) Depth below bed level upto 3.0 M	metre	24281.00
		(ii) Beyond 3m upto 10m depth	metre	17850.00
		(iii) Beyond 10m 20m	metre	23574.00
		(iv) Beyond 20m upto 30 m		
		a For sinking	metre	44219.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		b For sinking including kentledge	metre	53063.00
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	105058.00
		b For sinking including kentledge	metre	126069.00
		B. Clayey soil (11m dia. Well)		
		(i) Depth below bed level upto 3.0 M	metre	21478.00
		(ii) Beyond 3m upto 10m depth	metre	30238.00
		(iii) Beyond 10 m upto 20m		
		a For sinking	metre	39936.00
		b For sinking including dewatering, if required	metre	41932.00
		(iv) Beyond 20m upto 30m		
		a For sinking	metre	74908.00
		b For sinking including kentldge	metre	93635.00
		c For sinking including kentiledge & dewatering, if required	metre	98316.00
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	177969.00
		b For sinking including kentldge	metre	213563.00
		c For sinking including kentiledge & dewatering, if required	metre	224241.00
		C. Soft rock (9m dia well)		
		(i) Depth upto 3m	metre	46570.00
		D. Hard rock (9m dia well)		
		(i) Depth of hard rock strata upto 3 m	metre	61579.00
16.83	1200	**Sinking of 12 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is rekonewed from bed level		
		A Sandy soil		
		(i) Depth below bed level upto 3.0 M	metre	49478.00
		(ii) Beyond 3m upto 10m depth	metre	54712.00
		(iii) Beyond 10m 20m	metre	72257.00
		(iv) Beyond 20m upto 30 m		
		a For sinking	metre	135534.00
		b For sinking including kentledge	metre	162641.00
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	322010.00
		b For sinking including kentledge	metre	386412.00
		B Clayey soil (12m dia. Well)		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		(i) Depth below bed level upto 3.0 M	metre	53075.00
		(ii) Beyond 3m upto 10m depth	metre	78441.00
		(iii) Beyond 10 m upto 20m		
		a For sinking	metre	103595.00
		b For sinking including dewatering, if required	metre	108775.00
		(iv) Beyond 20m upto 30m		
		a For sinking	metre	194318.00
		b For sinking including kentIdge	metre	242898.00
		c For sinking including kentiledge & dewa-tering, if required	metre	255043.00
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	461673.00
		b For sinking including kentIdge	metre	554007.00
		c For sinking including kentiledge & dewa-tering, if required	metre	581708.00
		C. Soft rock (12m dia well)		
		(i) Depth of soft rock strata upto 3m	metre	111413.00
		D. Hard rock (12m dia well)		
		(i) Depth of hard rock strata upto 3 m	metre	143750.00
16.84	1200	**Sinking of Twin D Type well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is rekonewed from bed level		
		A Sandy soil		
		(i) Depth below bed level upto 3.0 M	metre	11271.00
		(ii) Beyond 3m upto 10m depth	metre	12108.00
		(iii) Beyond 10m 20m	metre	15993.00
		(iv) Beyond 20m upto 30 m		
		a For sinking	metre	29998.00
		b For sinking including kentledge	metre	35997.00
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	71269.00
		b For sinking including kentledge	metre	85523.00
		B Clayey soil (Twin D Type Well)		
		(i) Depth below bed level upto 3.0 M	metre	13019.00
		(ii) Beyond 3m upto 10m depth	metre	16453.00
		(iii) Beyond 10 m upto 20m		
		a For sinking	metre	21729.00
		b For sinking including dewatering, if required	metre	22816.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		(iv) Beyond 20m upto 30m		
		a For sinking	metre	40758.00
		b For sinking including kentIdge	metre	50948.00
		c For sinking including kentiledge & dewa-tering, if required	metre	53496.00
		(v) Beyond 30m upto 40 m		
		a For sinking	metre	9683800
		b For sinking including kentIdge	metre	116205.00
		c For sinking including kentiledge & dewa-tering, if required	metre	122015.00
		C. Soft rock (Twin D Type well)		
		(i) Depth of soft rock strata upto 3m	metre	23936.00
		D. Hard rock (Twin D Type well)		
		(i) Depth of hard rock strata upto 3 m	metre	29880.00
16.85		**Pneumatic sinking of wells** with equipment of approved design, drawing and specifications worked by competent and tained personnel and compression and decompression chambers, reducers, two air locks separately for men and plant & materials.		
16.86	1207	**Sand filling in wells** complete as epr drawing and technical specifications	cum	1331.00
16.87	1200 & 1900	**Providing steel liner** 10 mm thick for curbs and 6mm thick for steining of wells including fabri-cating and setting out as per detailed drawing	tonne	94687.00
16.88A	1100 & 1700	**Bored cast-in-situ M35 grade** R.C.C. pile excluding reinforcement complete as per drawing and tech-nical specifications and removal of excavated earth with all lifts and lead upto 1000 m (Pile diameter 750 mm)	metre	6987.00
16.88B	1101 & 1700	**Bored cast-in-situ M35 grade** R.C.C. pile excluding reinforcement complete as per drawing and technical	metre	7425.00
		specification and removal of excavated earth with all lifts and lead upto 1000 m including providing plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (asterplast PAE or equivalent) and accelerating plasticiser (Masterplast ACPL or equivalent) conforming to IS-9103-1999 (Pile diameter-750 mm)		
16.89 A	1100,1600 & 1700	**Bored cast-in-situ M35** grade R.C.C. pile excluding reinforcement complete as per drawing and	meter	11694.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diameter 1000 mm)		
16.89B	1100,1600 & 1701	**Bored cast-in-situ M35 grade** R.C.C. pile excluding reinforcement complete as per drawing and techical specifications and removal of excavated earth with all lifts and lead upto 1000 m. including providing plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplst ACPL or equivalent) conforming to IS-9103-1999) (Pile diamete-1000mm)	meter	12472.00
16.90A	1000 & 1700	**Bored cast-in-situ M35 grade** R.C.C. pile excluding reinforcement complete as per drawing and techical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diamete-1200mm)	meter	15399.00
16.90B	1100 & 1701	**Bored cast-in-situ M35 grade** R.C.C. pile excluding reinforcement complete as per drawing and techical specifications and removal of excavated earth with all lifts and lead upto 1000 m. including providing plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplst ACPL or equivalent) conforming to IS-9103-1999) (Pile diamete-1200mm)	meter	16520.00
16.91A	1100 & 1700	**Driven cast-in-place vertical M35** grade R.C.C. pile excluding reinforcement complete as per drawing and technical Specification (Pile diameter-750 mm)	metre	4935.00
19.91B	1100 & 1700	**Driven cast-in-place vertical M35 grade** R.C.C. pile excluding reinforcement complete as per drawing and technical Specification including providing plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplast ACPL or equivalent) conforming to IS-9103-1999 ((Pile diameter-750 mm)	metre	5373.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.92A	1100 & 1700	**Driven cast-in-place vertical** M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile diameter - 1000 mm)	Metre	8354.00
19.92B	1100 & 1700	**Driven cast-in-place vertical** M35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical Specification including providing plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplast ACPL or equivalent) conforming to IS-9103-1999 ((Pile diameter-1000 mm)	metre	9133.00
16.93A	1100 & 1700	**Driven cast-in-place vertical** M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile diameter - 1200 mm)	Metre	12105.00
19.93B	1100 & 1700	**Driven cast-in-place vertical** M35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical Specification including providing plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplast ACPL or equivalent) conforming to IS-9103-1999 ((Pile diameter-1200 mm)	metre	13226.00
16.94	1100	**Pile load test on single** vertical pile in accordance with IS:2911(Part-IV).	Ton	330.00
		a) Initial and Routine load test.		
		b) Lateral load test	Ton	5500.00
16.94 (i)	1100, 1500	**Cement concrete for** reinforced concrete in pile cap complete as per drawing and Technical Specification.		
		A. RCC Grade M20		
		(i) Using Concrete Mixer	cum	6847.00
		(ii) Using Batching Pant, Transit Mixer and Concrete Pump	cum	7463.00
		B. RCC Grade M25		
		(i) Using Concrete Mixer	cum	7514.00
		(ii) Using Batching Pant, Transit Mixer and Concrete Pump	cum	8145.00
		C. RCC Grade M30		
		(i) Using Concrete Mixer	cum	7598.00
		(ii) Using Batching Pant, Transit Mixer and Concrete Pump	cum	8214.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		D. RCC Grade M35		
		(i) Using Concrete Mixer	cum	7775.00
		(ii) Using Batching Pant, Transit Mixer and Concrete Pump	cum	8405.00
16.95 (II)	1100, 1500 & 1700	**Cement concrete for reinforced** concrete in pile cap complete as per drawing and Technical Specification including providing plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplast ACPL or equivalent) conforming to IS-9103-1999		
		A. RCC Grade M20		
		(i) Using Concrete Mixer	cum	7641.00
		(ii) Using Batching Pant, Transit Mixer and Concrete Pump	cum	8256.00
		B. RCC Grade M25		
		(i) Using Concrete Mixer	cum	8450.00
		(ii) Using Batching Pant, Transit Mixer and Concrete Pump	cum	9081.00
		C. RCC Grade M30		
		(i) Using Concrete Mixer	cum	8552.00
		(ii) Using Batching Pant, Transit Mixer and Concrete Pump	cum	9167.00
		D. RCC Grade M35		
		(i) Using Concrete Mixer	cum	8764.00
		(ii) Using Batching Pant, Transit Mixer and Concrete Pump	cum	9395.00
16.96	1100 & 1700	Levelling course for Pile cap	cum	5776.00
16.97	1600	**Reinforcement in Foundation :** Supplying, fitting and placing uncoated TMT bar reinforcement in foundation complete as per drawing and technical specifications		
		(a) With TATA make TMT CRS (Fe500 grade) rebar	tonne	72065.00
		(b) With TATA make TMT rebar	tonne	72065.00
		(c) With other make TMT rebar	tonne	64421.00
16.98	1600	**Supplying, fitting and placing** un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification	tonne	66376.00

SUB-STRUCTURE

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.99	1300 & 2200	Brikck masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and technical specifications	cum	7344.00
16.100	1300 & 2200	Pointing with cement mortar (1:3) on brick work in substructure as per Technical specifications	sqm	48.00
16.101	1300 & 2200	Plastering with cement mortar (1:3) on brick work in substructure as per Technical specifications	sqm	127.00
16.102	1400 & 2200	Stone masonry work in cement mortar (1:3) for substructure complete as per drawing and Technical Specifications		
		A. Random Rubble Masonry	cum	3827.00
		B. Coursed rubble masonry (first short)	cum	3842.00
		C. Ashlar masonry (first sort)	cum	4812.00
16.103(N)	1500, 1700 & 2200	Plain/Reinforced cement concrete, in sub structure complete as per drawing and technical specification and steel shttering formwork		
		(N) Without plasticiser		
		A. PCC Grade M15	cum	6483.00
		Height upto 5m		
		B. PCC Grade M20	cum	7215.00
		Height upto 5m		
		C. PCC grade M25		
		a Height upto 5m		
		Case I Using concrete Mixer	cum	7888.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9156.00
		b Height upto 5m		
		Case I Using concrete Mixer	cum	8175.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9489.00
		c Height above 10m		
		Case I Using concrete Mixer	cum	8533.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9905.00
		D. PCC Grade M30		
		a Height upto 5m		
		Case I Using concrete Mixer	cum	7962.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9289.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		b Height 5m to 10m		
		Case I Using concrete Mixer	cum	8251.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9626.00
		c Height abvoe 10m		
		Case I Using concrete Mixer	cum	8613.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10049.00
		E. RCC Grade M20		
		a Height upto 5m		
		Case I Using concrete Mixer	cum	7302.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	8631.00
		b Height 5m to 10m		
		Case I Using concrete Mixer	cum	7567.00
		Case II With Batching Plant, Transit Mixer and		
		Concrete Pump	cum	8945.00
		c Height abvoe 10m		
		Case I Using concrete Mixer	cum	7899.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	6527.00
		F. RCC Grade M25		
		a Height upto 5m		
		Case I Using concrete Mixer	cum	7982.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9312.00
		b Height 5m to 10m		
		Case I Using concrete Mixer	cum	8243.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9616.00
		c Height above 10		
		Case I Using concrete Mixer	cum	8635.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10074.00
		G. RCC Grade M30		
		a Height upto 5m		
		Case I Using concrete Mixer	cum	8022.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9355.00
		b Height 5m to 10m		
		Case I Using concrete Mixer	cum	8248.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9618.00
		c Height above 10m		
		Case I Using concrete Mixer	cum	8642.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10078.00
		H. RCC Grade M35		
		a Height upto 5m		
		Case I Using concrete Mixer	cum	8210.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9541.00
		b Height 5m to 10m		
		Case I Using concrete Mixer	cum	8389.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	9749.00
		c Height above 10m		
		Case I Using concrete Mixer	cum	8657.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10061.00
		(P) With plasticiser (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplast ACPL or equivalent) confoming to IS-9103-1999		
		A. PCC Grade M15		
		Height utp 5m	cum	7399.00
		B. PCC Grade M20		
		Height utp 5m	cum	8131.00
		C. PCC Grade M25		
		a Height upto 5m		
		Case I Using concrete Mixer	cum	8879.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10214.00
		b Height 5m to 10m		
		Case I Using concrete Mixer	cum	9202.00
		Case II With Batching Plant, Transit Mixer and		
		Concrete Pump	cum	9489.00
		c Height above 10m		
		Case I Using concrete Mixer	cum	9606.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	11049.00

Item No.	Ref. of MORT&H	Descriptions		Unit	Rate
		D.	**PCC Grade M30**		
		a	Height upto 5m		
		Case I	Using concrete Mixer	cum	8967.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10294.00
		b	Height 5m to 10m		
		Case I	Using concrete Mixer	cum	9293.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10668.00
		c	Height above 10m		
		Case I	Using concrete Mixer	cum	9701.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	11136.00
		E.	**RCC Grade M20**		
		a	Height upto 5m		
		Case I	Using concrete Mixer	cum	8217.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	9547.00
		b	Height 5m to 10m		
		Case I	Using concrete Mixer	cum	8516.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	9894.00
		c	Height above 10m		
		Case I	Using concrete Mixer	cum	8890.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10328.00
		F.	**RCC Grade M25**		
		a	Height upto 5m		
		Case I	Using concrete Mixer	cum	8982.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	10312.00
		b	Height 5m to 10m		
		Case I	Using concrete Mixer	cum	9276.00
		Case II	With Batching Plant, Transit Mixer and		
			Concrete Pump	cum	10650.00
		c	Height above 10m		
		Case I	Using concrete Mixer	cum	9717.00
		Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	11156.00
		G.	**RCC Grade M30**		
		a	Height upto 5m		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		Case I Using concrete Mixer	cum	9032.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10363.00
		b Height 5m to 10m		
		Case I Using concrete Mixer	cum	9286.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10655.00
		c Height above 10m		
		Case I Using concrete Mixer	cum	9647.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	11069.00
		H. RCC Grade M35		
		a Height upto 5m		
		Case I Using concrete Mixer	cum	9256.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10588.00
		b Height 5m to 10m		
		Case I Using concrete Mixer	cum	9458.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	10819.00
		c Height above 10m		
		Case I Using concrete Mixer	cum	9761.00
		Case II With Batching Plant, Transit Mixer and Concrete Pump	cum	11165.00
16.104		**Supplying, fitting and placing** TMT bar reinforcement in sub-structure complete as per drawing and technical specifications		
		(a) With TATA make TMT CRS (Fe 500 grade) rebar	tonne	72169.00
		(b) With TATA make TMT rebar	tonne	72169.00
		(c) With other make ISI marked TMT rebar	tonne	64525.00
16.105		**Supplying, fitting and placing** Mild steel reinforcement complete in sub-structure as per drawing and technical specification	tonne	67080.00
16.106		**Providing weep holes in Brick** masonry/Plain/ Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V:20H towards drawing foce. Complete as per drawing and Technical specification	each	191.00
16.107		**Back filling behind abutment**, wing wall and return wall complete as per drawing and Technical specification		
		A Granular material	cum	1126.00
		B Sandy material	cum	1510.00
16.108		**Providing and laying of Filter** media with granular materials/stone crushed aggregates satisfying the	cum	1539.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		requirements laid down in clause 2504.2.2 of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size toeards the wall and provided over the entire surfaces behind the abutement, wing wall and return wall to the full height compacted to firm condition complete as per drawing and technical specification.		
16.109		**Supplying, fitting and fixing** in position true to line and level cast steel rocker bearing conforming to IRC : 83 (Pt-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	tonne capacity	733.00
16.110		**Supplying, fitting and fixing** in position true to line and level forged steel roller bearing conforming to IRC : 83 (Pt-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	tonne capacity	633.00
16.111		**Supplying, fitting and fixing** in position true to line and level sliding plate bearing with PTFE surface sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clauses 2004 of MORT&H specification.	tonne capacity	337.00
16.112		**Supplying, fitting and fixing** in position true to line and level elastomeric bearing conforming to IRC : 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	cubic centimetre	1.15
16.113		**Supplying, fitting and fixing** in position true to line and level sliding plate bearing with stainless steel plate slidingon stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specification.	tonne capacity	189.00
16.114		**Supplying, fitting and fixing** in position true to line and level POT-PTFE bearing consistingof a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel matting surfaces, complete assembly to be of cast steel/fabricated structural steel, meatal and elastomer elements to be as per IRC:83 part-I&II respectively and parts conforming to BS:5400, section 9.1 & 9.2 and clause 2006 of MORTH&S Specification complete as per drawing and approved technical specification.	tonne capacity	215.00

SUPER-STRUCTURE

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.115		**Furnishing and Placing** reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specificaiton including steel shuttering framwork.		
		(N) Without Plasticiser		
		A. RCC Grade M20		
		Case I Using Concrete Mixer		
		(i) For slid slab super-structure		
		a Height upto 5m	cum	7885.00
		b Height 5m to 10m	cum	8213.00
		c Height above 10m	cum	8542.00
		(ii) For T-beam & slab		
		a Height upto 5m	cum	8213.00
		b Height 5m to 10m	cum	8542.00
		c Height above 10m	cum	8870.00
		Case II Using Batching Plant, Transit Mixer and Concrete Pump		
		(i) For solid slab super-structure		
		a Height upto 5m	cum	7274.00
		b Height 5m to 10m	cum	7577.00
		c Height above 10m	cum	7880.00
		(ii) For T-beam & slab		
		a Height upto 5m	cum	7577.00
		b Height 5m to 10m	cum	7880.00
		c Height above 10m	cum	8183.00
		B. RCC Grade M25		
		Case I Using Concrete Mixer		
		(i) For slid slab super-structure		
		a Height upto 5m	cum	8654.00
		b Height 5m to 10m	cum	9014.00
		c Height above 10m	cum	9375.00
		(ii) For T-beam & slab		
		a Height upto 5m	cum	9014.00
		b Height 5m to 10m	cum	9375.00
		c Height above 10m	cum	9736.00
		Case II Using Batching Plant, Transit Mixer and Concrete Pump		
		(i) For solid slab super-structure		
		a Height upto 5m	cum	8053.00

Item No.	Ref. of MORT&H	Descriptions		Unit	Rate
		b	Height 5m to 10m	cum	8389.00
		c	Height above 10m	cum	8724.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	8389.00
		b	Height 5m to 10m	cum	8724.00
		c	Height above 10m	cum	9060.00
		C.	**RCC Grade M30**		
		Case I	Using Concrete Mixer		
		(i)	**For slid slab super-structure**		
		a	Height upto 5m	cum	8771.00
		b	Height 5m to 10m	cum	9136.00
		c	Height above 10m	cum	9502.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	9136.00
		b	Height 5m to 10m	cum	9502.00
		c	Height above 10m	cum	9867.00
		Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	8153.00
		b	Height 5m to 10m	cum	8493.00
		c	Height above 10m	cum	8832.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	8493.00
		b	Height 5m to 10m	cum	8832.00
		c	Height above 10m	cum	9172.00
		D.	**RCC/PSC Grade M35**		
		Case I	Using Concrete Mixer		
		(i)	**For slid slab super-structure**		
		a	Height upto 5m	cum	8825.00
		b	Height 5m to 10m	cum	9199.00
		c	Height above 10m	cum	9573.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	9199.00
		b	Height 5m to 10m	cum	9573.00
		c	Height above 10m	cum	9946.00
		(iii)	**For box girder and balanced cantilever**		
		a	Height upto 5m	cum	10320.00
		b	Height 5m to 10m	cum	11068.00
		c	Height above 10m	cum	11816.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		Case II Using Batching Plant, Transit Mixer and Concrete Pump		
		(i) For solid slab super-structure		
		a Height upto 5m	cum	8212.00
		b Height 5m to 10m	cum	8560.00
		c Height above 10m	cum	8908.00
		(ii) For T-beam & slab		
		a Height upto 5m	cum	8560.00
		b Height 5m to 10m	cum	8908.00
		c Height above 10m	cum	9256.00
		(iii) For box grider and balanced cantilever		
		a Height upto 5m	cum	9604.00
		b Height 5m to 10m	cum	10300.00
		c Height above 10m	cum	10996.00
		E. PSC Grade M-40		
		Case I Using Concrete Mixer		
		(i) For slid slab super-structure		
		a Height upto 5m	cum	9112.00
		b Height 5m to 10m	cum	9491.00
		c Height above 10m	cum	9871.00
		(ii) For T-beam & slab		
		a Height upto 5m	cum	9491.00
		b Height 5m to 10m	cum	9871.00
		c Height above 10m	cum	10251.00
		Case II Using Batching Plant, Transit Mixer and Concrete Pump		
		(i) For solid slab super-structure		
		a Height upto 5m	cum	8320.00
		b Height 5m to 10m	cum	8673.00
		c Height above 10m	cum	9025.00
		(ii) For T-beam & slab		
		a Height upto 5m	cum	8673.00
		b Height 5m to 10m	cum	9025.00
		c Height above 10m	cum	9378.00
		(iii) For box grider and balanced cantilever		
		a Height upto 5m	cum	9730.00
		b Height 5m to 10m	cum	10435.00
		c Height above 10m	cum	11140.00
		F. PSC Grade M-45		
		Case I Using Concrete Mixer		
		(i) For slid slab/voided super-structure		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		a Height upto 5m	cum	8628.00
		b Height 5m to 10m	cum	9000.00
		c Height above 10m	cum	9372.00
		(ii) For I-beam & slab including launching of pre-cast griders by launching truss upto 40 m span		
		a Height upto 5m	cum	9000.00
		b Height 5m to 10m	cum	9372.00
		c Height above 10m	cum	9743.00
		(iii) For cast-in-situ box girder, segmental construction and balanced cantilever		
		a Height upto 5m	cum	10115.00
		b Height 5m to 10m	cum	10859.00
		c Height above 10m	cum	11603.00
		G. PSC Grade M-50		
		(i) For cast-in-situ box girder, segmental construction and balanced cantilever		
		a Height upto 5m	cum	10414.00
		b Height 5m to 10m	cum	11185.00
		c Height above 10m	cum	11957.00
		H. PSC Grade M-55		
		(i) For cast-in-situ box girder, segmental construction and balanced cantilever		
		a Height upto 5m	cum	10999.00
		b Height 5m to 10m	cum	11813.00
		c Height above 10m	cum	12628.00
		(P) **With plasticiser** (Masterplast PL-1/SPL-2 or equivalent), air entraining and water reducing plasticiser (Masterplast PAE or equivalent) and accelerating plasticiser (Masterplast ACPL or equivalent) conformingto IS-9103-1999.		
		A. RCC Grade M20		
		Case I Using Concrete Mixer		
		(i) For slid slab super-structure		
		a Height upto 5m	cum	8970.00
		b Height 5m to 10m	cum	9344.00
		c Height above 10m	cum	9717.00
		(ii) For T-beam & slab		
		a Height upto 5m	cum	9344.00
		b Height 5m to 10m	cum	9717.00
		c Height above 10m	cum	10091.00
		Case II Using Batching Plant, Transit Mixer and Concrete Pump		

Item No.	Ref. of MORT&H	Descriptions		Unit	Rate
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	8270.00
		b	Height 5m to 10m	cum	8615.00
		c	Height above 10m	cum	8959.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	8615.00
		b	Height 5m to 10m	cum	8959.00
		c	Height above 10m	cum	9304.00
		B.	**RCC Grade M25**		
		Case I	Using Concrete Mixer		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	9936.00
		b	Height 5m to 10m	cum	10350.00
		c	Height above 10m	cum	10764.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	10350.00
		b	Height 5m to 10m	cum	10764.00
		c	Height above 10m	cum	11178.00
		Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	9336.00
		b	Height 5m to 10m	cum	9725.00
		c	Height above 10m	cum	10114.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	9725.00
		b	Height 5m to 10m	cum	10114.00
		c	Height above 10m	cum	10503.00
		C.	**RCC Grade M 30**		
		Case I	Using Concrete Mixer		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	10076.00
		b	Height 5m to 10m	cum	10496.00
		c	Height above 10m	cum	10916.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	10496.00
		b	Height 5m to 10m	cum	10916.00
		c	Height above 10m	cum	11336.00
		Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
		(i)	**For solid slab super-structure**		

Item No.	Ref. of MORT&H	Descriptions		Unit	Rate
		a	Height upto 5m	cum	9458.00
		b	Height 5m to 10m	cum	9852.00
		c	Height above 10m	cum	10246.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	9852.00
		b	Height 5m to 10m	cum	10246.00
		c	Height above 10m	cum	10640.00
		D.	**RCC/PSC Grade M 35**		
		Case I	Using Concrete Mixer		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	10157.00
		b	Height 5m to 10m	cum	10587.00
		c	Height above 10m	cum	11018.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	10587.00
		b	Height 5m to 10m	cum	11018.00
		c	Height above 10m	cum	11448.00
		(iii)	**For box girder and balanced cantilever**		
		a	Height upto 5m	cum	11878.00
		b	Height 5m to 10m	cum	12739.00
		c	Height above 10m	cum	13600.00
		Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	9544.00
		b	Height 5m to 10m	cum	9948.00
		c	Height above 10m	cum	10353.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	9948.00
		b	Height 5m to 10m	cum	10353.00
		c	Height above 10m	cum	10757.00
		(iii)	**For box girder and balanced cantilever**		
		a	Height upto 5m	cum	11162.00
		b	Height 5m to 10m	cum	11970.00
		c	Height above 10m	cum	12779.00
		E.	**PSC Grade M 40**		
		Case I	Using Concrete Mixer		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	10492.00
		b	Height 5m to 10m	cum	10929.00
		c	Height above 10m	cum	11366.00

Item No.	Ref. of MORT&H	Descriptions		Unit	Rate
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	10929.00
		b	Height 5m to 10m	cum	11366.00
		c	Height above 10m	cum	11803.00
		Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	9677.00
		b	Height 5m to 10m	cum	10088.00
		c	Height above 10m	cum	10498.00
		(ii)	**For T-beam & slab**		
		a	Height upto 5m	cum	10088.00
		b	Height 5m to 10m	cum	10498.00
		c	Height above 10m	cum	10908.00
		(iii)	**For box girder and balanced cantilever**		
		a	Height upto 5m	cum	11318.00
		b	Height 5m to 10m	cum	12138.00
		c	Height above 10m	cum	12958.00
		F	**PSC Grade M 45**		
		(i)	**For solid slab super-structure**		
		a	Height upto 5m	cum	10071.00
		b	Height 5m to 10m	cum	10505.00
		c	Height above 10m	cum	10939.00
		(ii)	**For I-beam & slab including launching of pre-cast griders by launching truss upto 40 m span**		
		a	Height upto 5m	cum	10505.00
		b	Height 5m to 10m	cum	10939.00
		c	Height above 10m	cum	11373.00
		(iii)	**For cast-in-situ box girder, segmental construction and balanced cantilever**		
		a	Height upto 5m	cum	11807.00
		b	Height 5m to 10m	cum	12675.00
		c	Height above 10m	cum	13544.00
		G.	**PSC Grade M 50**		
		(i)	**For cast-in-situ box girder, segmental construction and balanced cantilever**		
		a	Height upto 5m	cum	12184.00
		b	Height 5m to 10m	cum	13086.00
		c	Height above 10m	cum	13989.00
		H.	**PSC Grade M 55**		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		(i) For cast-in-situ box girder, segmental construction and balanced cantilever		
		a Height upto 5m	cum	12910.00
		b Height 5m to 10m	cum	13866.00
		c Height above 10m	cum	14822.00
16.116		**Reinforcement in Super Structure :** Supplying, fitting and placing TMT bar reinforcement in super-structure including splicing complete as per drawing and technical specifications		
		(a) With TATA make TMT CRS (Fe500 grade) rebar	tonne	70685.00
		(b) With TATA make TMT rebar	tonne	70685.00
		(c) With other make ISI marked TMT rebar	tonne	63173.00
16.117		**High tensile steel** wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications.	tonne	142099.00
16.118		**Providing and laying** Cement concrete wearing coat M-30 grade including reinforcement complete as epr drawing and Technical Spcificatins	cum	14137.00
16.119 (A)		Mastic Asphalt **Providing and laying** 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope aftering clearning the surface, incluidng providing antiskid surface with bitumen pre coated fine grained hard stone shopping of 9.5mm nomial size of the rate of .005 cum per 10sqm and at approximate spacing of 10cm center to center in both directions, pressed into surfaces when temperatur eof the surfaces not less than 100 degC, protu1mm to 4mm over mastic surfaces, all complete as per clause 515.	sqm	456.00
(B)		**Providing and laying** Bituminous wearing course comprising of tack coat with bitumen emulsion CSS-1h as epr APWD SOR item no. 5.2 & MOSRT&H Specification Nos 503 0.6mm thick mastic asphalt as per APWD SOR item no. 14.5 & MOSRT&H Specification Nos 515 & 2702 and 2 layers of 25mm thick Asphalt concrete including of close Graded		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
Premix Surfacing (CGPS)		materials with Type a aggregate as per APWD SOR tem n 5.11 & MOSRT&H Specification Nos 512 incluidng alllead and lift as directed.	sqm	584.00
16.120		**Construction of precast** RCC railing of M30 Grade, aggregate size not exceeding 12mm, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequat space between vertical posts for expansion. complete as per approved drawings and technical specification.	metre	2193.00
16.121		**Construction of RCC** railing of M30 Grade in-situ with 20 mm nomianl size aggregate, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequat space between vertical posts for expansion, complete as per approved drawings and technical specifications.	metre	2140.00
16.122		**Providing, fitting** and fixing mild steel railing complete as per drawing and Technical Specification	metre	4358.00
16.123		**Drainage Spouts** complete as per drawing and Technical specification	Each	8615.00
16.124		**PCC M15 Grade** leveling course below approach slab complete as per drawing and Technical specification	cum	5893.00
16.125		**Reinforced cement** concrete approach slab including reinforcement and formwork complete as epr drawing and Technical specification		
		(a) With TATA make TMT CRS (Fe-500) grade rebar	cum	13261.00
		(b) With TATA make TMT grade rebar	cum	13261.00
		(c) With other ISI marked TMT grade rebar	cum	12879.00
16.126		**Providing anti-corrosive** treatment to HYSD/TMT reinforcement with Fusion Bonded Epoxy Coating (FBEC) (To be taken as per the prevailing market rates)	tonne	
16.127		**Precast - pretensioned Girders** (Providing, precasting, transportation and placing in position precast pretensioned concret griders as per drawing and technical specifications)	cum	21578.00

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
16.128		**Painting on concrete surface** (Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ 1 litre for 2 sq.m)		
(A)		For Plain surface	sqm	37.00
(B)		For RCC Railing	RM	131.00
16.129		**Burried Joint** (Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12m thick, 200 mm wide galvanised wieldable structural steel plate as per IS:2062, placed symmetrical to centre line of the joint, resting freely over the top surfaces of the deck concrete, welding fo 8mm dia, 100mm long galvanized nails spaced 300mm C/C along the center line of the plate, all as specified in clause 2604)	metre	1492.00
16.130		**Filler joint**		
		(i) Providing & fixing 2mm thick corrugated copper plate in expansion joint complete as per drawing & Technical specification.	metre	1238.00
		(ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification	metre	346.00
		(iii) Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10m to cater for a horizontal movement upto 20 mm covered with sealant complete as per drawing and technical specification.	metre	312.00
(iv)		Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight	metre	18.00
16.131		**Asphaltic Plug joint** (Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm. depth or joint varying from 75 mm to 100 m, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate 200mm × 6mm of wiedable structural steel conforming to IS:2062, asphaltic plug consist of ploymer modified bitumen binder, carefully selected single size		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
aggregate of	12.5mm nominal size and heat resistant foam caulking/backer rod, all as per approved drawing and specifications)		metre	1406.00
16.132		**Elastomeric Slab Steel Expansion Joint** (Providing and laying of an elastomeric slab steel expansion joint, catering to right or skew (less than 20 deg., moderately curved with maximum horizontal movement upto 50 mm, complete as epr approved drawings and standard specificatin to be installed by th emanufacture/supplier or their authorised representative ensuring compliance to the manufactueres instructions for installation and clause 2506 of MORTS&H specification of bridge works.)	metre	16584.00
16.133		**Compression Seal Joint** (Providing and laying of compression seal joint consisting of steel amoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closd cell foam joint sealer compressed and fixed ino the gap with special adhesive binder to cater for a horizontal movement up to 40mm and vertical movement of 3mm.	metre	14328.00
16.134		**Strip Seal Expansion Joint** (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70mm, compete as per approved drawings and standard specifications to be isntalled by the manufacture/suplier or their authorised representative ensuring compliance to the manufacturer's instruction for installation).	metre	13139.00
16.135		**Modular Strip/Box Seal Joint** (Providing and laying of a strip Box steel expansion joint catering to maximum horizontal movement upto 70mm, compete as per approved drawings and standard specifications to be isntalled by the manufacture/suplier or their authorised representative ensuring compliance to the manufacturer's instruction for installation).	metre	161637.00
16.136		**Modular Strip/Box Seal Joint** (Providing and laying of a strip Box steel expansion joint catering to maximum horizontal movement		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
upto 210mm, compete as		per approved drawings and standard specifications to be isntalled by the manufacture/suplier or their authorised representative ensuring compliance to the manufacturer's instruction for installation).	metre	260018.00
16.137		**Extra for providing** water proofing compound (Providing and applying cement mortar (1 cement 3 sand) with STRUCO LATEX or its equivalent as epr specification and as directed by the Department	sqm	300.00
16.138		**Extra for providing** water proofing compound (Cleaning the surface and applying two coats of ARMOURCRETE or its equivalent as per specification and as directed by the Department.	sqm	243.00
		GEO BAGS		
16.139		**Supply and Daumping** of Geo Bags in Loose (with Boat) Supplying, filling and laying of Geo-textile bags of Type-A (130 × 0.70 m) made of Geo textile non woven fabric sheets of 400 GSM manufactured from polyster/polly prppelene conforming to relevant ISO standard and conforming to technical specification. Incluidn excation of specified sand/silt from flood plain or adacent char within a distance of 90 m of the work site, filling Geo bags with sand weighing 126.00 kg after filling, stitching the mouth of the filled bags with polypropylene or polyster	Bag	272.00
16.140		**Supply and Dumping** of Geo Bags in Loose (IN SLOPE AND DRY BED WITHOUT BOAT)	Bag	261.00
16.41		**Supply, Stitching** and laying of Non wooven Go textile Fabric sheet of 400 gsm	Bag	199.00
16.142		**SUPPLY AND DUMPING** OF GEO BAGS IN CAGES (WITH BOAT) **Supplying, filling** and laying of Geo-textile bags of Type-A (1.30 × 0.70 M) made of Geo textile non woven fabric sheets of 400 GSM manufactured from polyster/polly prppelene conforming to relevant ISO standard and conforming to technical specification of fill-materials, stitching the two sides of the bags with polyster thread as per technical specification and drawing.		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		Including excavation of specified sand/silt from flood plain or adjacent char within a distance of 90 m of the work site, filling Geo bags with sand weighig 126.00 kg after filling, stiching the mouth of the filled bags with polypropylene or polyster thread by power driven double needle machine, stacking the same in batches of 100, carrying the same to the dumping site including all handlling charges and local carriage within a distance of 150 m and laying properly in cages of PVC coated G.I. Gabion box of size 1.5 × 1.5 × 45m complete as directed.		
		a) With Boat	Cage	758.00
		b) Without Boat	Cage	526.00
16.143		**Earthwork in excavation** in key cage of size 1.00 m		
		× 1.00 m for anchoring geo fabrics mat including supply and filling of geo bags (bags are filled with sand/silt from flood plain or adjacent char within a distance of 90 m of the work site, filling geo bags with sand weighing 126 kg after filling, stichingmouth with polyster/polypropylene thread by power driven double needle machine, carrying the same to the site including all handling charges and local carriage from a distance of 150 m.	cum	3217.00
16.144		**Supplying, laying** fitting fixing g-mat in doubled layer composite geo textile fabricated to form a three dimensional mattresses after filling sand by pump, the upper layer of mattress being heavily woven with polyproplyne fabric needle punched with a mixtur eo fU.V. stabilized green fibres and cut tape yarns (Typical value of mass per unit are ASTM D5261) is 650g/sqm. tensile strength (ASTMD4595) is 45kn/m. pore size (ASTMD4751) is < 0.35mm and UV stability (strength retained per ASTMD4355-92@500 hrs is 80%) the lower layer of the mattress being polypropyline wooven fabric, UV stabilized (Typicalvalue of mass per unit area (ASTM D 4595) is greaterb than 80kn/m. pore size (ASTMD4751) is <0.35mm and UV stability (strength retained per ASTM4355-92@500 hrs is		

Item No.	Ref. of MORT&H	Descriptions	Unit	Rate
		80% the sewing thread being of high tenacity polyster, continued parrell stitches positioned 350mm apart with a stitch lenftnot exceeding 40mm (Typical value of tensile strength 1000 N. elongation at break is 20%), anchoring by cutting trenche at the upper end for a depth of 1.5m × 1m placing the mat by bending it into the trench, filling the trench with earth filled cement bags and anchorage at lower end, site seeming of matress at right angle to the sloping direction with a double locking chain stitch not less then 3 stitch/inches to achieve a minimum seam strength of 25 Kn/M, the sewing yarn shall be of including all charges complete as directed. a) Approved rate of CWC for the FMP scheme under WRD	sqm	2280.00
16.145		**Construction of base of Road** pavement by making use of Evocrete CCL (German) Technology by recyclig the exiting pavement material minus 53mm size and subgrade soil crushing the road base material topredetermined gradation with the help of recycler profilling the material to the required design standard followed by spreading 10% (64 kg) of OPC 43 grade cement per sqm then spreading & 2 PC (1.28 kg/sqm) Evocrete additiv eand mixing the cement and additive first loosen the newly spread material & subgrade to required depth and mixing then with recycler while simultenious sprinkling of water and also constructing corresponding shoulder profiling with grader then commence the dynamic compaction with 14 tonne steel jacket roller. Removng loose material from the surface prior to resortng to static compaction with rubber tyred roller 16 tone, vibratory roller, smooth wheel roller to 95% degree of compaction including filling fo cavity and levelling the uneen surface complete as directed by the engineer-in-charge. Finally imgating the stabilized surface to next 48 hours.	cum	5131.00

Item No.		FOUNDATIONS	Unit	Rate
16.146		**Providing & erecting** 4 rope wire rope safety fence barrier consisting of 4 tensioned galvanized steel wire ropes supported by galvanized steel posts of 'Z' section. One upper rope is located within a central slot in the top of the posts and three ropes interwoven along the adjacent posts. The rops are joined and tensioned by means of rigging screws and the ends of the ropes are attached to anchors embeded in the ground or surface mounted. The steel post shall be 5mm thick "Z" shaped galvanized mild steel with a standard sectin of 100mm × 55mm × 5mm and wire rope shall have a diameter 19mm constructed of 3 × 7 (i.e. 7 wires in a strand and three strand in each rope), being three strand spun coreless, each strand comprising six wire spun around one king wire having tensilr strength of 1370 N/sqm with a minimum beak load of 17.7 tons. The rope shall be factory prestressed until it is in elastic condition. The top ewire shall be 930 + _30 from grond level to centre of wire and the post shall be plced maximum 3.2 mtrs centre to centre. All installed wire rope safety barriers need to be embeded in concrete direct or in steel sockets, End rope anchors/terminals are of cast in or surface mounted design and designed to detach the rope connectors when an errant vehicle collides at an end anchor positions, check ropes will be installed on all line and tail ropes before terminal connections or swaging takes place. The thimble end of the check ropes will always be assembled over the lines and tail ropes, the soft eye connecting with D-Shackle which must be connected to the lug of the terminal unit.	Rm	4164.00

BASIC RATES

(A) Labour

Sl No.	Description of Labour	Unit	Rate (Rs.)
L-01	Bhisti	day	169.00
L-02	Bitumen Sprayer	day	169.00
L-03	Blacksmith	day	180.00
L-04	Blaster	day	190.00
L-05	Carpenter 1st Class	day	227.00
L-06	Chips spreader	day	169.00
L-07	Chiseller	day	169.00
L-08	Dresser (Skilled)	day	175.00
L-09	Driller	day	175.00
L-10	Electrician	day	227.00
L-11	Fitter	day	227.00
L-12	Mason (1st class)	day	200.00
L-13	Mason (2nd Class)	day	180.00
L-14	Mate	day	169.00
L-15	Mazdoor (Unskilled)	day	169.00
L-16	Mazdoor (Semi skilled)	day	169.00
L-17	Mazdoor (Skilled)	day	175.00
L-18	Painter (Ist class)	day	190.00
L-19	Plumber	day	190.00
L-20	Survey or	day	230.00
L-21	White Washer	day	169.00

BASIC RATES
(B) Material

Descriptions	Unit	Rate
Aggregate - For 37.5 mm Maximum size - 22.4 mm to 5.6 mm	cum	998.00
Aggregate - For 37.5 mm Maximum size - 45 mm to 22.5 mm	cum	1047.00
Aggregate - For 37.5 mm Maximum size - Below 5.6 mm	cum	810.00
Aggregate - For 53 mm Maximum size - 22.5 mm to 5.6 mm	cum	998.00
Aggregate - For 53 mm Maximum size - Below 5.6 mm	cum	810.00
Aggregate - Grading I (40 mm nominal Size) 10 mm - 5 mm	cum	1092.00
Aggregate - Grading I (40 mm nominal Size) 25 mm – 10 mm	cum	1192.00
Aggregate - Grading I (40 mm nominal Size) 37.25 mm - 25 mm	cum	1127.00
Aggregate - Grading I (40 mm nominal Size) 5 mm and below	cum	810.00
Aggregate - Grading II (19 mm nominal Size) 10 mm - 5 mm	cum	1092.00
Aggregate - Grading II (19 mm nominal Size) 25 mm – 10 mm	cum	1192.00
Aggregate - Grading II (19 mm nominal Size) 5 mm and below	cum	810.00
Aggregate 10 mm	cum	1280.00
Aggregate 20 mm	cum	1383.00
Aggregate 40 mm	cum	1250.00
Aggregate 10 mm (Natural Gravel)	cum	1240.00
Aggregate 20 mm (Natural Gravel)	cum	1330.00
Aggregate 40 mm (Natural Gravel)	cum	1110.00
Aggregate- Crushable type such as moorum or Gravel for Grading I	cum	521.00
Aggregate- Crushable type such as moorum or Gravel for Grading II	cum	521.00
Aggregate- Crushable type such as moorum or Gravel for Grading III	cum	521.00
Aggregate-Grading I 90 mm to 45 mm	cum	1066.00
Aggregate-Grading II 63 mm to 45 mm	cum	1129.00
Aggregate-Grading III 53 mm to 22.4 mm	cum	1192.00
Aggregates 22.4 mm to 2.36 mm for wet mix macadam	cum	845.00
Aggregates 45 mm to 22.4 mm for wet mix macadam	cum	967.00
Aluminium sheeting (1.5 mm thick)	sqm	305.00
Aluminium Studs 100 mm x 100 mm fitted with lense reflectors	Nos.	300.00
Aggregates 11.2 mm to 0.09 mm		1080.00
Aggregates 13.2 mm to 0.09 mm	cum	1080.00
Aggregates 13.2 mm to 5.6 mm	cum	1073.00
Aggregates 13.2 mm to 10 mm	cum	1231.00
Aggregates 20 mm to 10 mm	cum	1331.00
Aggregates 25 mm to 10 mm	cum	1232.00
Aggregates 19 mm to 6 mm	cum	1341.00
Aggregates 37.5 mm to 19 mm	cum	1243.00
Aggregates 37.5 mm to 25 mm	cum	1127.00

Descriptions	Unit	Rate
Aggregates 6 mm nominal size	cum	1300.00
Aggregates 10 mm nominal size	cum	1280.00
Aggregates 13.2/12.5 mm nominal size	cum	1182.00
Aggregates 20 mm to nominal size	cum	1383.00
Aggregates 25 mm to nominal size	cum	1130.00
AC pipe 100 mm dia	metre	50.00
Acrylic polymer bonding coat	litre	185.00
Alluminium Paint	litre	220.00
Aluminium ally/galvanised steel	tone	52920.00
Aluminium studs 100 × 100 mm fited with lense reflectors	nos	300.00
Admixture (Master plast PL-1 or equivalent)	litre	113.0
Admixture (MasterplastPL-2 or equivalent)	litre	94.00
Air entraining and water reducing plasticiser conforming to IS9103-1999 (Masterplast PAE or equivalent)	lit	70.00
Accelerating plasticiser conforming to IS-9103-1999 (Masterplast APCL or equivalent)	lit	92.00
Bamboo (1st Class) 85 mm - 100 mm dia, 3.0 m long	nos	85.00
Bamboo (2nd Class) 75mm dia, 1.8 m - 2.5 long	nos	70.00
PVC rain waterpipe 100mm dia	RM	83.00
Recron 3s fibre	kg	224.00
Boulder with minimum size of 300 mm for Pitching at Site	cum	538.00
Barbed wire	kg	70.00
Bearing (Cost of parts)	nos	126000.00
Bearing (Cast steel rocker bearing assembly of 250 tonne)	nos	129360.00
Bearing (Elastomeric bearing assembly consisting of 7 internal layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process	nos	13500.00
Bearing (Forged steel roller bearing of 250 tonne)	nos	111720.00
Bearing (Pot type bearing assembly consisting of a metal piston supported by a disc, PTFE pads providing sliding surfaces against stainless steel mating together with cast steel assemblies/fabricated structural steel assemblies duly	nos	37672.00
Bearing (PTFE sliding plate bearing assembly of 80 tonne)	nos	18816.00
Bearing (Supply of sliding plate bearing of 80 tonne)	nos	10500.00
Bentonite kg	11.00	
Binding wire	kg	80.00
Bitumen (Cationic Emulsion) (CSS-1h)	tonne	40654.00
Bitumen (Cationic Emulsion) CSS-1) (IS:8887-2004)	tonne	39183.00
Bitumen Cationic Emulsion (CSS-2)	tonne	40590.00
Bitumen Cationic Emulsion (CRS-2)	tonne	40642.00
Bitumen Cationic Emulsion (Css-1)	tonne	39183.00
Bitumen Cationic Emulsion (CRS-1)	tonne	36431.00

Descriptions	Unit	Rate
Bitumen cold mix Binder All in 1	tonne	42494.00
Bitumen Cationic Emulsion (CRS-1)	tonne	36431.00
Bitumen cold mix Binder All in 1	tonne	42494.00
Bitumen Cationic Emulsion (MS)	tonne	34864.00
Bitumen (60-70 grade)	tonne	39783.00
Bitumen (80-100 grade)	tonne	38826.00
Bitumen (CRMB) 55	tonne	41783.00
Bitumen (modified graded) PMB	each	54600.00
Brick	kg	7.00
C.I. shoes for the pile	tonne	80.00
Cement	tonne	7900.00
Coller for joints 300 mm dia	nos	440.00
Compressible Fibre Board (20mm thick)	sqm	976.00
Connectors/Staples	each	67.00
Copper Plate (12m long × 250 mm wide)	kg	174.00
Corrosion resistant Structural steel	tonne	60000.00
Corrugated sheet, 3 mm thick, “Thrie” beam section railing	kg	79.00
Credit for excavated rock found suitable for use	cum	168.00
Curing compound	liter	193.00
Coal tar	kg	40.00
Coarse sand at Mixing Plant	cum	749.00
Coarse sand at Site	cum	749.00
Delineators from ISI certified firm as per the standard drawing given in IRC	each	
Earth Cost or compensation for earth taken from private land	cum	
Elastomeric slab seal expansion joint assembly manufactured by using chloroprene, elastomer for elastomeric slab unit conforming to clause 915.1 of IRC : 83 (part II).	metre	16400.00
Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	100 nos	392.00
Epoxy resin-hardner mix for prime coat	kg	800.00
Epoxy comound with accessories for preparing expoxy mortar	kg	575.00
Epoxy mortar	kg	401.00
Epoxy primer	kg	299.00
Fine sand at Site	cum	749.00
Fly ash conforming to IS:3812 (Part II & I) at HMP Plant/Batching Plat/	cum	350.00
Filter media/Filter Material as per Table 300-3 (MoRT&H Specification)	cum	797.00
Galvanised MS flat clamp	nos	262.00
Galvanised steel wire crates of mesh size 100 mm × 100 mm woven with 4mm	sqm	210.00
Galvanised structural steel plate 200 mm wide, 6 mm thick, 24 m long	kg	55.00
Gelatin 80%	kg	64.00
Geo grids (TGB-40)	sqm	216.00

Descriptions	Unit	Rate
Geomembrane (1.5 mm thick)	sqm	301.00
Geonests (Geonet 121)	sqm	280.00
Geotextile (GNW-280)	sqm	104.00
Geotextile filter fabric (GNW-280)	sqm	122.00
GI bolt 10 mm Dia	nos	11.00
Grouting pump with agitator	hour	280.00
Grass (Doob)	kg	16.00
Grass (Fine)	cum	24.00
Gravel/Quarry spall at Site	cum	651.00
HDPE pipes 75mm dia	metre	100.00
HDPE pipes 90mm dia	metre	144.00
Hedge plants	each	10.00
Helical pipes 600mm diameter	metre	78.00
Hot applied thermoplastic compound	litre	90.00
HTS strand	tonne	103488.00
Joint Sealant Compound	kg	535.00
Jute netting, open weave, 2.5 cm square opening for seeding and Mulching	sqm	30.00
LDO for steam curing	litre	30.00
M.S. Clamps	nos	17.00
M.S. Clamps	kg	80.00
M.S. shoes & 35 kg per pile of 15 m	kg	80.00
Mild Steel bars	tonne	50000.00
Modular strip/box seal expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm assembly comprising of edge beams, central beam, 2 modules chloroprene seal, anchorage elements, support and control system, all steel	metre	103400.00
Modular strip/box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm box/box seal joint assembly containing 3 modules/cells and comprising of edge beams, two central beams, chloro-prene seal, anchorage elements, support and	metre	156025.00
Nipples 12mm	nos	21.00
Nuts and bolts	kg	80.00
Paint	litre	230.00
Pavement Marking Paint	litre	85.00
Paving Fabric	sqm	286.00
Perforated geosynthetic pipe 150 mm dia	metre	425.00
Perforated pipe of cement concrete, internal dia 100 mm dia	metre	85.00
Pipes 200 mm dia, 2.5 m long for drainage	metre	500.00
Plastic sheath, 1.25 mm thick for dowel bars	sqm	22.00
Plastic tubes 50 cm dia, 1.2 m high	nos	52.00

Descriptions	Unit	Rate
Polymer braids	metre	22.00
Pre moulded Joint filler, 25 mm thick for expansion joint	sqm	672.00
Pre-coated stone chips of 13.2 mm nominal size	cum	3528.00
Pre-mould asphalt filler board	sqm	616.00
Pre-packed cement based polymer concrete of strength 45 Mpa at 28 days	kg	43.00
Primer	lit	150.00
Quick setting compound	kg	30.00
Random Rubble Stone	cum	448.00
RCC Pipe NP 4 heavy duty non presure pipe 1000 mm dia	metre	7799.00
RCC Pipe NP 4 heavy duty non presure pipe 1200 mm dia	metre	9427.00
RCC Pipe NP 4 heavy duty non presure pipe 300 mm dia	metre	1052.00
RCC Pipe NP 3 heavy duty non presure pipe 600 mm dia	metre	2618.00
RCC Pipe NP 3 heavy duty non presure pipe 1000 mm dia	metre	5760.00
RCC Pipe NP 3 heavy duty non presure pipe 1200 mm dia	metre	7787.00
Reflectorising glass beads	kg	67.00
Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Copper Strips)	metre	1050.00
Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Galvanised carbon steel strips)	metre	224.00
Reinforcement strips 60 mm thick as epr clause 3102. (Glass reinforcd polymer/fibre reinforced polymer/polymeric strips)	metre	600.00
Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Stainless steel strips)	metre	600.00
Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. Aluminium	metre	448.00
Stone Boulder of size 150 mm and below at Cruser Plant	cum	651.00
Supply of quarried stone 150-200 mm size for hand Broken at site Rivets	each	4.00
Sand bags (Cost of sand and Empty cement bag)	nos	15.00
Sapling 2 m high 25 mm dia	each	39.00
Scrap tyres of size 900 × 20	nos	28.00
Sheeds	kg	28.00
Selected earth	cum	155.00
Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	34.00
Sheathing duct	each	85.00
Shrubs	each	11.00
Sludge/Farm yard manure @ 0.18 cum per 100 sqm at site ow work for turfing	cum	56.00
Sodium vapour lamp	each	7500.00
Square Rubble Coursed Stone	cum	560.00
Steel circular hollow pole of standard sepcification for street lighting to mount light at 5 m height above deck level	each	7000.00

Descriptions	Unit	Rate
Steel circular hollow pole of standard specification for street lighting to mout light at 9 m height above road level	each	10000.00
Steel drum 300 mm dia 1.2 m high/empty bitumen drum	nos	62.00
Steel helmet and cushion block on top of pile head during driving	kg	55.00
Steel pipe 25 mm external dia as per IS:1239	metre	68.00
Steel pipe 50 mm external dia as per IS:1239	metre	131.00
Steel reinforcement (HySD Bars)	tonne	42000.00
Steel reinforcement (MS Round Bar)	tonne	51000.00
Steel reinforement (TMT Bars, Fe 500) Tata make	tonne	47203.00
Steel reinforcement (TMT Bars, Tata make)	tonne	47203.00
Steel wire rope 20 mm	kg	145.00
Steel wire rope 40 mm	kg	88.00
Stone screeing - Type A 13.2 fro Grading-1	cum	632.00
Stone screeing - Type A 13.2 fro Grading-2	cum	632.00
Stone screeing - Type B 11.2 fro Grading-2	cum	592.00
Stone screeing - Type B 11.2 fro Grading-3	cum	592.00
Strip seal expansion joint	metre	19000.00
Structural Steel (Over head sign)	tonne	52000.00
Structural Steel (I.S.226,2062)	tonne	57000.00
Super plastisizer admixture IS marked as per 9103	kg	99.00
Through and bond stone	each	8.00
Tie rods 20mm diameter	nos	52.00
Tiles size 300 × 300 mm and 25 mm thick	each	54.00
Timber	cum	32400.00
Traffic cones with 150 mm reflective sleeve	nos	1229.00
Tube anchorage set complete with bearing plate, permanent wedges etc	nos	1420.00
Unstakedlime	tonne	5600.00
Well graded Granular Base Material - Grading A 2.36 mm below	cum	556.00
Well graded Granular Base Material - Grading A 26.5 mm to 4.75 mm	cum	966.00
Well graded Granular Base Material - Grading A 53 mm to 26.5 mm	cum	1066.00
Well graded Granular Base Material - Grading B 2.36 mm below	cum	556.00
Well graded Granular Base Material - Grading B 26.5 mm to 4.75 mm	cum	966.00
Well graded Granular Base Material - Grading C 2.36 mm below	cum	556.00
Well graded Granular Base Material - Grading C 9.5 mm to 4.75 mm	cum	988.40
Well graded Material for Sub-Base- Grading I 2.36 mm below	cum	556.00
Well graded Material for Sub-Base- Grading I 53 mm to 9.5 mm	cum	1066.00
Well graded Material for Sub-Base- Grading I 9.5 mm to 2.36 mm	cum	752.00
Well graded Material for Sub-Base- Grading II 2.36 mm below	cum	556.00
Well graded Material for Sub-Base- Grading II 26.5 mm to 9.5 mm	cum	1032.00
Well graded Material for Sub-Base- Grading II 9.5 mm to 2.36 mm	cum	752.00

Descriptions	Unit	Rate
Well graded Material for Sub-Base- Grading III 2.36 mm below	cum	556.00
Well graded Material for Sub-Base- Grading III 4.75 mm to 2.36 mm	cum	944.00
Well graded Material for Sub-Base- Grading III 9.5 mm to 4.75 mm	cum	988.00
Water	KL	40.00
Water based cement paint	litre	34.00
Welded steel wire fabric	kg	43.00
Wire mesh 50mm × 50mm size of 3mm wire	kg	43.00
Wooden ballies 2" Dia for bracing	each	198.00
Wooden ballies 8" Dia and 9 m long	each	3100.00
Wooden packing	cum	24000.00
Wooden staff for fastening of flag 25 mm dia, one m long	each	56.00
Bamboo Bholuka or Barua 50mm to 100mm dia 6 M long	each	85.00
Bamboo Jati or Betua 50mm to 100mm dia 6 M long	each	70.00
Wood local first class piles 25cm to 30cm	metre	3300.00
Wood local first class planks 25mm to 38mm thick	cum	25215.00
Wood local first class small section	cum	17784.00
Wood local first class scantling upto 15cm × 15cm	cum	20122.00
Wood local first classheavy section above 15cm × 15cm	cum	22922.00
Wood sal piles 25cm to 30cm	metre	4000.00
Wood sal planks 25mm to 38mm thick	cum	30473.00
Wood sal scantling upto 15cm × 15cm	cum	25538.00
Wood sal scantling heavy section above 15cm × 15cm	cum	25038.00

BASIC RATES
(C) USAGE RATES OF PLANT AND MACHINERY

Descriptions		Output of Machine			Hire charge per hour in Rs (Exluding fuel)	Usage rate per hour in Rs (Including Fuel)
Description of Machine	**Activity**	**Unit**	**Output**	**Unit**		**Rate**
Air Compressor 210 cfm	Supplying compressed air	cfm	210.00	per hour		354.00
Batch mix HMP 40-60 TPH	BM, DBM, SDBC, PM	t/h	50.00	per hour		12,379.00
Batch type HMP 30/40 TPH	BM, DBM, SDBC, PM	t/h	35.00	per hour		6,584.00
Batching and mixing plant(a) 30cum capacity	concrete mixing	cum/hour	20.00	per hour		1,957.00
Batching and mixing plant(b) 15-20cum capacity	concrete mixing	cum/hour	13.00	per hour		1,590.00
Bitumen pressure distributor	Applying bitumen tack coat	sqm/hour	1750.00	per hour		954.00
Bitumen boiler oil fired 200 litre 1000 litre	Heating of bitumen	 litre / h litre / h	 400.00 2000.00	 per hour per hour	 164.00	 178.00 178.00
Bitumen emulsion pressure distributor	Applying bitumen tack coat	sqm/h	1750.00	per hour		717.00
Concrete pump of 45&30 cum capacity	Pumping of concrete	cum/hour	1.50	per hour		234.00
Concrete bucket	For pouring concrete	/cum	1.00	per hour		15.00
Concrete mixer 0.28/0.4 cum	Mixing of ingradients	cum/h	2.50	per hour	162.00	188.00
Crane (a) 80 t0n	Lifting purpose			per hour		1,136.00
Crane(b)35 ton	Lifting purpose			per hour		759.00
Crane(c)3 ton	Lifting purpose			per hour		318.00
Crane upto 8T	Lifting of materials			per hour		685.00
Dozer D 50	Dozing cutting	cum/h cum/h	200.00 100.00	per hour	2096.00	1,965.00
D-80-A-12	Spreading/cutting/ clearing	cum/h	300/150/250			3,194.00
Drum mix plant for cold mixes of appropriate capacity but not less		per hour				1,859.00

Descriptions		Output of Machine			Hire charge per hour in Rs (Exluding fuel)	Usage rate per hour in Rs (Including Fuel)
Description of Machine	**Activity**	**Unit**	**Output**	**Unit**		**Rate**
Electric generator set, 125 KVA	Electricity generation	KVA	100.00	per hour	437.00	1,388.00
Emulsion Sprayer with Tractor	Spraying of Emulsion			per hour		409.00
Front end-loader 1 cum bucket capacity @ 45 cum/hour	Loading Aggregates Loading Soil	cum/h cum/h	45.00 100.00	per hour	511.00	882.00
Hot mix plant 120 TPH	DBM/BM/SDC/Premix	cum/h	40.00	per hour		22,823.00
Hot mix plant 100TPH	DBM/BM/SDC/Premix	cum/h	30.00			16,575.00
Hot mix plant 60 t0 90TPH	DBM/BM/SDC/Premix	cum/h	25.00	per hour		14,115.00
Hydraulic broom with tractor	Surface cleaning	sqm/h	1250.00			337.00
Hydraulic Excavator 1 bucket	Excavation	hour	60/60/60	per hour	1006.00	1,365.00
Hydraulic Excavator 0.9 cum	Excavation	cum/h	100.00			1,485.00
Hydraulic self propelled chip spreader	Surface Dressing	sqm/h	1500.00	per hour		2,380.00
Joint Cutting Machine with 2-3 blades	Cutting of Joints	h		per hour		150.00
Mastic cooker	Mastic wearing coat	Ton	1.00	per hour		56.00
Mixall 6-10 t capacity	Mixing of bituminous materials	t/h	8.00	per hour	445.00	1,686.00
Motor Grader	Scarifier & levelling	cum/h	200.00 50.00	per hour		2,795.00
Needle vibrator	Vibrating cement concrete mix	cum/h	3.50	per hour		101.00
Paver finisher Hydrostatic with sensor control 100 TPH	Paving of DBM/BM/ SDC/Premix	cum/h	40.00	per hour	603.00	1,129.00
Pneumatic sinking plant	Pneumatic sinking of wells	cum/h	1.5 to 2.00	per hour		3,453.00
Piling rig with bantonite pump	.75 dia to 1.2m attatchment dia boring	Rm/hour	2 to 3	per hour		4,665.00
Prestressing Jack with access.	Stressing of steel wire/strands			per hour		113.00
Paver finisher	Laying/spreading	t/h	75.00	per hour		883.00
Plate compactor	Compaction	cum/h		per hour		218.00

Descriptions		Output of Machine			Hire charge per hour in Rs (Exluding fuel)	Usage rate per hour in Rs (Including Fuel)
Description of Machine	**Activity**	**Unit**	**Output**	**Unit**		**Rate**
Plate vibrator	Compaction	cum/h		per hour		218.00
Rotavator	Scarifying	cum/h	25.00	per hour		22.00
Ripper	Scarifying	cum/h	60.00	per hour		31.00
Road marking machine	Road marking	Sqm/hr	100.00	per hour	192.00	192.00
Screed vibrator	Compaction	cum/h		per hour		
Smooth wheeled 80-100 kN tandem roller	Compaction of Sub-base/ Asphalt	cum/h	30.00	per hour		652.00
Stone crusher (Integrated) of 200 TPH	Crushing of Spalls	t/h	200.00	per hour		14,389.00
Three wheel 80-100 kN Static Roller	Compaction/ Rolling			per hour		652.00
	Earth:- Embankment or sub-grade	cum/h	80/70			652.00
	Sub-base G-I	cum/h	10.00			652.00
	Sub-base G-II/G-III	cum/h	8.00			652.00
	WMM	cum/h	16.00			652.00
	BUSG	cum/h	10.00			652.00
	BM 50/75 mm	cum/h	12.00			652.00
	Premix 20 mm	sqm/h	250.00			652.00
	Seal Coat	sqm/h	500.00			652.00
	Surface Dressing 1st Coat	sqm/h	400.00			652.00
	Surface Dressing 2nd Coat	sqm/h	500.00			652.00
Tipper 5.5 cum/10 t	Carriage	cum/trip	5.50	per hour	408.00	680.00
Tractor with Disc Harrows	Pulverisation of soil	cum/h	80.00	per hour		
Tractor with ripper @ 60 cum per hour	Ripping Pavements, uprooting trees	cum/h	60.00	per hour		440.00
Tractor with trolley	Transportation of materials	t/trip	3 to 5	per hour		409.00
Tractor with Rotavator	Scarifier	cum/h	25.00	per hour		431.00
Tractor with Grader	Grading	cum/h	25.00	per hour		431.00
Transit mixure 4.0/4.5cum	Transportation of concrete mix	cum/h	4.50	per hour		828.00

Descriptions		Output of Machine			Hire charge per hour in Rs (Exluding fuel)	Usage rate per hour in Rs (Including Fuel)
Description of Machine	**Activity**	**Unit**	**Output**	**Unit**		**Rate**
Transit mixure 4.0/4.5cum	Transportation of concrete mix	cum/h	4.50	Ton/km		40.00
Truck 10 t capacity	Carriage	cum/trip	5.50	per hour	413.00	717.00
Vibratory roller 80-100 kN	Compaction of soil WMM Compaction of BM	cum/h cum/h	100.00 60.00	per hour	908.00	1,421.00
Water tanker 6 kl capacity (Truck Mounted)	Carriage of water	litre / h	12000.00	per hour		432.00
Wet mix plant (Pug Mill)	Wet Mix	cum/h	25.00	per hour		1,149.00

CORRIGENDUM

Correction in specifications and unit of some items intheSchedule of Rates for (Rural Roads) for all Divisions under PWRD, Assam 2016-17 published, have been made as per instruction of the Chief Engineer, P.W.D. (Roads), Assam and are to be read accordingly.

Item No.	SPECIFICAITON TO BE READ AS	Unit	Rate
	Chapter-5		
5.3	(i) Providing and laying bituminous macadam with hot mix plant using crushed aggregates of grading as per Table 500.4 premixed with bituminous binder (S-90), transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction as per Technical Specification Clause 504.	cum	
	(ii) Providing and laying Cold Mix bituminous macadam only by credible technology partners duly licensed by CRRI with Drum mix plant using crushed aggregates of grading as per Table 500.4 premixed with Cold mix binder (MS), transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction as per Technical Specification (IRC:SP:100-2014)	cum	
5.10	(i) 20mm thick Open Graded Premix Carpet using Bitumen Emulsion (RS-1) as per Technical Specification Clause 508.2	sq.m	
	(ii) Using Cold mix Binder All in 1 (Tailor made as per IRC:SP:100-2014) and by credible technology partners duly licensed by CRRI	sq.m	
	Chapter-6		
6.7 (B)	Providing and laying Edge block/Edge restraints 300mm x 300mm x 150mm of (c.c)M 40 Grade including carriage as per Technical specification clause 1504.	No	
	Chapter-12		
12.6	Supplying, fitting and placing HYSD bar reinforcement in substructure complete as per drawings and technical specification Clauses 1002, 1005, 1010 1202	t	
12.7	Supplying, fitting and placing TMT barreinforcement in substructure complete as per drawings and technical specifiction Clauses 1002, 1005, 1010 & 1202	t	
12.8	Supplying, fitting and placing with MS bar reinforcement in substructure complete as per drawings and technical specifiction Clauses 1002, 1005, 1010 & 1202	t	
	Chapter-16		
16.62	Labour for talking out old log beam of bridge andrefitting the same including supplying and fixing necessarynew MS bolts, nuts, sikes nail etc and colatering oncoat aplied hot as directed (Coal tar to be suplied by the contractor at his own costs.)	meter	