GOVERNMENT OF CHHATTISGARH

PUBLIC WORKS DEPARTMENT

NATIONAL HIGHWAY ZONE

SCHEDULE OF RATES

FOR

ROAD & BRIDGE WORKS

With Effect From 01st June, 2021

Issued By

CHIEF ENGINEER,
NATIONAL HIGHWAY ZONE,
P.W.D., RAIPUR (C.G.)

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OFFICE OF THE CHIEF ENGNEER,
NATIONAL HIGHWAY ZONE, PWD,
RAIPUR (CG)

SCHEDULE OF RATES FOR ROAD & BRIDGE WORKS OF NH ZONE

No.907/WORKS/CE/NH/SOR **Raipur, Dated 31/05/2021**

PREAMBLE

The Schedule of Rates was published by Chief Engineer, National Highway Zone, PWD, Raipur on 15.11.2019 for Road & Bridge works of National Highway Zone. Revised Schedule of Rates has been prepared and now it is applicable with effect from **01st June, 2021** for Road & Bridge works pertaining to NH Zone, PWD as well as Ministry of Road Transport & Highways in the State of Chhattisgarh.

There has been considerable variation in the market rates of material as well as enhancements in labour rates published by Department of Labour Welfare since last publication of SOR. Also, Indian Road Congress has revised several codes recently & Government of Chhattisgarh has also revised the rates of Royalty and many other tax rates. Along with this, GOI has introduced new tax GST in the year 2017. Also, Ministry of Road Transport & highways has made a policy to execute works more than 5 crores on EPC contract basis. Therefore, keeping in view all above mentioned points, it is felt necessary to revise Schedule of Rates to evaluate realistic civil cost of Highway projects pertaining to National Highways in the state of Chhattisgarh.

In view of the above, this combined Schedule of Rates has been prepared for Roads and Bridge works for National Highway works after (a) Incorporation of current market rates of material and labor, (b) Few new items as per latest IRC codes and MoRTH's specification for Road & Bridge works 5th revision and (c) The current royalty and other taxes except GST. The rates in SOR are excluding GST. The rates of GST are changed by GOI time to time. However, it is decided to add 12% as GST over estimated cost to evaluate realistic civil cost of the project.

It is matter of great pleasure that the revised SOR for Road & Bridge Works of National Highway Zone is coming into force from **1st June, 2021** & shall be applicable for all works of National Highways only.

All efforts have been made to make this document error free. However, effective suggestion, addition and alterations are always welcome for any further betterment of the document.

At the last I would like to convey sincere thanks to all Committee Members of SOR revision-2021, and specially to Shri U.S. Verma, Executive Engineer and Shri Hasan Ansari who have made sincere efforts to prepare this document.

31/5/21

(Er. K.K. Pipri)
Chief Engineer
National Highway Zone
PWD, Raipur (C.G.)

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GENERAL NOTES
ROAD & BRIDGE WORKS

1)	**SOR-2021** has been prepared on the basis of the "Standard Data Book for Analysis of Rates" of MoRTH, published by Indian Roads Congress. Some items, which do not find place in the Standard Data Book for Analysis of Rates, as these are required and had not been provided in the previous SOR, looking to the necessity of execution these items have also been included in new SOR.	
2)	(a)	"Specifications" would refer to the "Specifications for Road and Bridge works" (V^{th} Revision) published by the Indian roads Congress in April 2013, on behalf of the Government of India, Ministry of Road Transport & Highways.
	(b)	"Clause" would refer to the clauses of the Specifications referred to, in note (a) above.
	(c)	"Engineer-in-Charge" would refer to the Executive Engineer of the division concerned.
	(d)	"Table" would refer to the table of the aforesaid Specifications.
3)	The rates of all items include element of setting out and carrying out the work in narrow or part width of road, where directed.	
4)	In the absence of any stipulation to the contrary, unit rates for different items of works are for completing the works to the specifications i/c full compensation for all operations detailed in the relevant sections of the specifications under "Rates". The rates are to be considered as the full inclusive rate for the finished work covering all labour, material, royalties, lease, rent, wastage, temporary work, plant, equipment, overhead charges and profit, unless specified otherwise.	
5)	**Overhead charges** included the following elements :-	
	i)	Site office & accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
	ii)	Office furniture, equipment and communications.
	iii)	Expenditure on :- Corporate office of contractor, Site Supervision, Documentation and "as built" drawings
	iv)	Mobilisation / de-mobilisation of resources
	v)	Labour camps with basic amenities and transportation to work sites.
	vi)	Light vehicle for site supervision including administration and managerial requirements
	vii)	Laboratory equipment and quality control including field and laboratory testing.
	viii)	Minor T&P and survey instruments and setting out works, including verification of line, dimension, trial pits and bore holes, where required.
	ix)	Temporary Diversion with Safety measures
	x)	Watch and ward
	xi)	Traffic management & Safety during construction
	xii)	Expenditure on safeguarding environment

	xiii)	Sundries
	xiv)	Financing Expenditure
	xv)	Insurance / compensation

6) Mode of measurements shall be as per provisions contained in the relevant clauses of the specifications, unless specified otherwise.

7) The rates are inclusive of the element of hire and running charges of all types of plant, machinery and equipment required to complete the work, unless specified otherwise. Royalty, octroi-duty, but commercial and all other taxes are included in the rates except GST. GST charges are not included in the rates.

8) The rates are exclusive of GST charges. GST shall be as per prevailing laws of GOI. However, GST shall be added @ 12% over estimated cost for the purpose of realistic cost of project. GST shall not be payable to the Contractor. Contractor has to include GST in his quotation / bid.

9)	(i)	Cost of drums would be charged extra in case of supply of bitumen in packed drums at Rs.200/- each and Rs.500/- each for the drum of bitumen and emulsion respectively, if these materials are supplied by the department.
	(ii)	Bitumen and modified bitumen shall be obtained from approved Govt. petroleum refineries.
	(iii)	Only VG-30 grade bitumen will be used in all bituminous works, unless specified otherwise.

10) A. Theoretical consumption of bitumen has been worked out on the basis of the following compacted densities of mix for preparation of SOR :

(i) for Bituminous Macadam	2.20 gm/cc
(ii) for Dense Bituminous Macadam	2.30 gm/cc
(iii) for Bituminous Concrete	2.36 gm/cc

B. During construction, if the density of mix obtained by job mix formula for items mentioned in (10)A herein above are found less than the densities mentioned above, proportionate cost of bitumen at basic rate mentioned in SOR shall be recovered from the contractor.

11) The rates also include the element of testing of samples of various materials brought by the contractor for use on the work as well as other tests for items of work as stipulated in the specifications as per clause-903 and its sub-clauses of "Specifications for Road and Bridge works" of MoRTH (V^{th} Revision). Frequency of such tests to be carried out must not be less than the prescribed frequencies. Copies from Registers containing records of tests shall have to be presented along with running account bills. A record of actual consumption of materials like, bitumen, cement, steel etc. be maintained at site and copy submitted along with each running bill and the same should be cross checked with theoretical consumption before making payment. Register (original) shall have to be submitted along with the final bill. Tests shall have to be conducted for the contractor's material by his Engineers under the supervision of the Engineer-in-Charge or his authorized representatives in the field laboratory established by the contractor. However, the Engineer-in-Charge may direct to carry out tests in the departmental laboratory or any approved laboratory for which the testing charges will be paid by the contractor or may be deducted from bills. Before making any payment, it will be the responsibility of the officer making payment to ensure that all tests as per prescribed frequencies have been carried out

	and the results are well within the scope of permissible limits.		
12)	The **Section-900** of the specifications mentions **"as required"** against frequencies of some of the tests. To stave off disputes the following frequencies are specified:-		
	(a)	Deleterious constituents.	One test per 500 Cum. or part thereof.
	(b)	C.B.R.	--------- do --------
13)	For items Surface Dressing, Open Graded Premix Surfacing (by manual means) and Seal Coat type-A & Seal Coat type B (by manual means) the aggregates shall be stacked at site by the contractor which will be recorded in the Measurement Book and 100% check will be affected by the Sub-Divisional Officer prior to their use on work. No separate payment shall be made for stacking as the same is deemed to be included in the rates of these items.		
14)	The rates have been normally analyzed for items being executed through mechanical means. However, for certain items, rates have been derived for execution through manual means also. These items (using manual means) should be incorporated in the estimates only after site inspection by the S.E. and after getting written permission from the C.E.		
15)	Metal to be used for all bituminous courses and cement concrete shall be crushed in mechanical crushers.		
16)	If any work is found to be sub-standard, but the Engineer-in-Charge is of the opinion that the same can be accepted at a reduced rate, then the Engineer-in-Charge shall submit proposals for the same, supported by an analysis, i.e. justification of such reduction, through a D.O. letter to the Superintending Engineer concerned, to obtain his approval expeditiously (ordinarily, within 15 days). The approved analysis along with orders of the Superintending Engineer should be appended to the final bill of the contractor.		
17)	The Design C.B.R. for Sub-grade soil (500 mm below the Sub-base) shall be 8% or above. The CBR for borrow material for construction of embankment shall have minimum CBR value 5%.		
18)	The work of shoulders must precede the work of Sub-base and Base courses and succeed the Bituminous courses and Cement Concrete pavement.		
19)	The rates for shoulders include the operation of cleaning and scrapping of deleterious material and preparing of surface with required cross fall before laying of material for construction of shoulders.		
20)	Rates for the items of Dense Bituminous Macadam and Bituminous Concrete are based on the bitumen percentage as specified in the items. If additional bitumen required as per job mix formula shall be deemed to be included in the quotation of the Contractor. No additional payment shall be payable on this account.		
21)	Use of cement of required specifications at the rate of 2% by weight of total aggregate as filler for Bituminous Concrete and Dense Bituminous Macadam is mandatory. Lime shall not be used as filler.		
22)	a)	Rates of items would also apply for work order/piece work system.	
	b)	Rates payable for any work to be done departmentally on work order/piece work may either be at-par or below rates in this SOR.	
23)	Rates for Transportation in Chapter No. 1 of "Carriage of Materials" include :-		
	i)	Loading and unloading into transport vehicle with incidental leads up to 100 M. at each place and all lifts.	
	ii)	Stacking at suitable places as directed by the Engineer-in-Charge, the weights of	

		the container of any material shall be ignored.
24)	The measurement of excavation is to be done as per Clause 301.8. For rock excavation, where cross sectional measurements are not possible due irregular configuration, or where the rock is admixed with other classes of materials, the volume shall be computed on the basis of stack measurements of excavated rubble allowing a deduction of **35%** thereof. For stack measurement of excavated material other than rock, a deduction of **16%** of stack volume shall be made.	
25)	Rubble obtained from excavation of hard rock shall be used for conversion into coarse aggregates or for other constructions. It is already considered in rate analysis of excavated rock for use in the work by the Contractor.	
26)	The Contractor will carry out dismantling of utilities under the supervision of the concerned department with prior information to the users/Authority.	
27)	The girth of trees shall be measured at 1.00 meter (One meter) above ground level.	
28)	Rates of site clearance include jungle clearance leveling and dressing.	
29)	All wood obtained from the tree cutting shall be the property of the Government and shall be deposited by the Contractor as directed by Engineer-in-Charge.	
30)	In case of any contradiction in the provisions of the Specifications and this Schedule of Rates, the provisions of the SOR would take precedence.	
31)	The Basic rates of bituminous materials considered in this SOR are based on rates as follows :	
	(a) Bitumen VG-40 (Bulk)	Rs. 42688.00 per M.T.
	(b) Bitumen VG-30 (Bulk)	Rs. 40925.00 per M.T.
	(c) Bitumen VG-10 (Bulk)	Rs. 40625.00 per M.T.
	(d) Bitumen Emulsion - Cationic (Grade- RS confirming to IS:8887)	Rs. 43355.00 per M.T.
	(e) Bitumen Emulsion - Cationic (Grade- MS confirming to IS:8887)	Rs. 45919.00 per M.T.
	(f) Bitumen Emulsion - Cationic (Grade- SS1 confirming to IS:8887)	Rs. 45830.00 per M.T.
	(g) Bitumen Emulsion - Cationic (Grade- SS-2, ASTM)	Rs. 45830.00 per M.T.
	(h) CRMB-60	Rs. 43826.00 per M.T.
32)	Labour rates are based on Labour Commissioner of Chhattisgarh, Raipur under Minimum Wages Act, 1948 w.e.f. 01.04.2021.	

ROAD WORKS

CHAPTER- 1
CARRIAGE AND SUPPLY OF MATERIALS

Item No.	Descriptions	Unit	Rate (Rs.)
	(Volume to be computed as per provisions in clause 520)		
1.1	**Transportation of metal i/c loading & unloading**		
i)	For a lead upto 1 Km.	**Cum.**	**102.00**
ii)	Beyond 1 Kms. and upto 10 Kms.(Add extra for every 1 Km.)	**Cum.**	**4.60**
iii)	Beyond 10 Kms. and upto 20 Kms. (Add extra for every 1 Km.)	**Cum.**	**3.50**
iv)	Beyond 20 Kms. and upto 50 Kms. (Add extra for every 1 Km.)	**Cum.**	**3.20**
v)	Beyond 50 Kms. (Add extra for every 1 Km.)	**Cum.**	**3.00**
1.2	**Transportation of different other material i/c loading & unloading**		
		Rate as %age of metal transportation rates	
a)	Flag Stone/cut stone	**Cum.**	**40% above**
b)	Masonry stones	**Cum.**	**75% above**
c)	Rubble	**Cum.**	**15% above**
d)	Loose moorum/sand/earth/surkhi/cement/stone dust/hot mix asphalt material	**Cum.**	**10% below**
e)	Excavated/compacted ordinary & other soil measured as per clause 301.8, 304.4 and 305.8	**Cum.**	**20% above**
f)	Excavated ordinary rock measured as per clause 304.4	**Cum.**	**90% above**
g)	Coal/fuel wood/Iron work/steel/G.I. Sheets/ pipes/ lime/machinery etc.	**M.T.**	**7.5% below**
h)	More than 100 mm dia ballies	**R.M.**	**1.5% of metal**
i)	Upto 100 mm diameter ballies	**R.M.**	**0.75% of metal**
j)	Tar/paints/bitumen etc.	**M.T.**	**5% above**
k)	Hume pipe		
	i) Upto 1000mm dia	**R.M.**	**80% of metal**
	ii) Above 1000mm dia	**R.M.**	**110% of metal**
1.3	**Transportation by trucks on hire**		
i)	Trucks hired for full load excluding loading/unloading and stacking for items not covered above for distances:		
	a) Up to 10 kms.	Per Km.	**69.60**
	b) Beyond 10 Kms. and up to 50 Kms. add extra over a) above	Per Km.	**50.00**
	c) Beyond 50 Kms. add extra over b) above.	Per Km.	**45.00**

Item No.	Descriptions	Unit	Rate (Rs.)
ii)	Loading of trucks (by manual means)	**Cum.**	**161.00**
iii)	Unloading of trucks and stacking (by manual means)	**Cum.**	**161.00**
1.4	**Hire charges for machineries : (only working hours to be paid and idle hours not to be paid)**		
i)	Tractor with trolley	**Hour**	**324.00**
ii)	Tractor with ripper	**Hour**	**379.00**
iii)	Tractor mounted water tanker	**Hour**	**456.00**
iv)	Truck mounted water tanker	**Hour**	**823.00**
v)	Crane for lifting		
	a) 40 T capacity	**Hour**	**987.00**
	b) 80 T capacity	**Hour**	**1078.00**
vi)	Hydraulic excavator of 1.0 Cum bucket	**Hour**	**1160.00**
vii)	Road rollers :		
	(a) Smooth wheeled roller 8 T	**Hour**	**410.00**
	(b) Tandem Road roller	**Hour**	**964.00**
	(c) Pneumatic Road roller	**Hour**	**1047.00**
	(d) Vibratory roller	**Hour**	**1299.00**
viii)	Tipper	**Hour**	**541.00**
ix)	Truck	**Hour**	**314.00**
x)	Paver Finisher Mechanical	**Hour**	**865.00**
1.5	**Supply of mineral aggregate like broken stone/crushed stone (crushed in mechanical crusher) as per clause 520 at road site including all lead and stacking etc. complete.**		
i)	75 mm standard size broken stone	**Cum.**	**1379.00**
ii)	63 mm standard size broken stone	**Cum.**	**1514.00**
iii)	45 mm standard size broken stone	**Cum.**	**1627.00**
iv)	45 mm standard size Crushed stone	**Cum.**	**1135.00**
v)	22.4 mm standard size Crushed stone	**Cum.**	**1117.00**
vi)	13.2 mm standard size Crushed stone	**Cum.**	**956.00**
vii)	11.2 mm standard size Crushed stone	**Cum.**	**999.00**
viii)	6.7 mm standard size Crushed stone	**Cum.**	**985.00**
1.6	**Supply of fine aggregate and filler material as per clause 520 including all lead and stacking etc. complete**		
i)	Crusher stone dust	**Cum.**	**768.00**
ii)	Sand/Shingle/Kanker/Laterite	**Cum.**	**959.00**
iii)	Moorum	**Cum.**	**507.00**
1.7*	Supplying, transporting and stacking of hot premixed bituminous macadam using crushed aggregate of grading-2 confirming to clause 504 with binder content 3.4% by weight of mix, transported from hot mix plant to site, inclusive of all leads.	**MT**	**2763.00**

Note :- ***** This item to be executed with prior permission of Chief Engineer.

CHAPTER – 2
SITE CLEARANCE

Item No.	Descriptions	Unit	Rate (Rs.)
2.1	**Cutting of trees**, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 mtrs and earth filling in the depression/pit and as per relevant clauses of section-200 for :-		
i)	Girth from 300 mm to 600 mm	**Each.**	**320.00**
ii)	Girth beyond 600 mm to 900 mm	**Each.**	**544.00**
iii)	Girth beyond 900 mm to 1800 mm	**Each.**	**1101.00**
iv)	Girth above 1800 mm	**Each.**	**2123.00**
2.2	**Clearing Grass and Removal of Rubbish** (clearing grass and removal of rubbish up to a distance of 50 meters outsite the periphery of the area)	**Hectare.**	**23593.00**
2.3	**Clearing and grubbing** road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 meters including removal and disposal of top organic soil not exceeding 150 mm in thickness if required and as per relevant clauses of section-200.		
A	In area of light jungle	**Hectare.**	**71170.00**
B	In area of thorny jungle	**Hectare.**	**95154.00**
2.4	**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 up to 1000 meters and as per relevant clauses of section-200 in		
(i)	**Lime / Cement Concrete**		
A	Lime Concrete, cement concrete grade M-10 and below	**Cum.**	**462.00**
B	Cement Concrete Grade M-15 & M-20	**Cum.**	**557.00**
C	Pre-stressed / Reinforced cement concrete grade M-20 & above	**Cum.**	**1514.00**
(ii)	**Brick / Tile work**		
A	In lime mortar	**Cum.**	**273.00**
B	In cement mortar	**Cum.**	**368.00**
C	In mud mortar	**Cum.**	**236.00**
D	Dry brick pitching or brick soling	**Cum.**	**217.00**
(iii)	**Stone Masonry**		
A	Rubble stone masonry in lime mortar	**Cum.**	**311.00**
B	Rubble stone masonry in cement mortar.	**Cum.**	**368.00**
C	Rubble Stone Masonry in mud mortar.	**Cum.**	**273.00**
D	Dry rubble masonry	**Cum.**	**255.00**
E	Stone pitching/ dry stone spalls.	**Cum.**	**236.00**

Item No.	Descriptions	Unit	Rate (Rs.)
F	Boulders laid in wire crates including opening of crates and stacking dismantled materials.	**Cum.**	**273.00**
(iv)	Wood work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level.	**Cum.**	**678.00**
(v)	Steel work in all types of sections up to a height of 5 m above plinth level excluding cutting of rivet.		
A	Including dismembering	**Tone.**	**1828.00**
B	Excluding dismembering.	**Tone.**	**1369.00**
C	Extra over item No(V) A and(V) B for cutting rivets.	**Each.**	**13.00**
(vi)	**Scraping of bricks dismantled from brick work including stacking.**		
A	In lime/Cement mortar	**1000No.**	**1651.00**
B	In mud mortar	**1000No.**	**590.00**
(vii)	**Scraping of Stone from dismantled stone masonry**		
A	In cement and lime mortar	**Cum.**	**663.00**
B	In Mud mortar	**Cum.**	**141.00**
(viii)	**Scraping plaster in lime or cement mortar from brick/ stone masonry**	**Sqm.**	**20.00**
(ix)	Removing all type of hume pipes and stacking within a lead up to 1000 meters including earthwork and dismantling of masonry works around pipes.		
A	Up to 1000 mm dia	**Meter.**	**703.00**
B	Above 1000 mm dia	**Meter.**	**934.00**
2.5	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 meters, stacking serviceable and unserviceable materials separately and as per relevant clauses of section-200.		
A	Bituminous courses	**Cum.**	**857.00**
B	Granular courses	**Cum.**	**601.00**
2.6	**Dismantling of cement** concrete pavement i/c breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead upto 1000 meters, stacking serviceable and unserviceable materials separately and as per relevant clauses of section-200.	**Cum.**	**1373.00**
2.7	**Dismantling guard rails** by manual means and disposal of dismantled material with all lifts and up to a lead upto 1000 meters, stacking serviceable materials and unserviceable materials separately and as per relevant clauses of section-200.	**Meter.**	**90.00**
2.8	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts and up to a lead upto 1000 meter and as per relevant clauses of section-200.	**Meter.**	**15.00**
2.9	**Dismantling kerb stone channel** by manual means and disposal of dismantled material with all lifts and up to a lead upto 1000 meter and as per relevant clauses of section-200.	**Meter.**	**23.00**
2.10	**Dismantling of kilometer stone** including cutting of earth, foundation and disposal of dismantled material with		

Item No.	Descriptions	Unit	Rate (Rs.)
	all lifts and lead upto 1000 m and back filling of pit.		
A	5th KM stone	**Each.**	**461.00**
B	Ordinary KM Stone	**Each.**	**275.00**
C	Hectometer Stone	**Each.**	**55.00**
2.11	**Dismantling of barbed wire fencing/wire mesh fencing** including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled material with all lifts and up to a lead of 1000 meters, stacking serviceable material and unserviceable material separately.	**Meter.**	**63.00**
2.12	**Dismantling of CI water pipe line** 600 mm dia including disposal with all lifts and lead up to 1000 meters and stacking of serviceable material and unserviceable material separately under supervision of concerned department.	**Meter.**	**144.00**

CHAPTER- 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

Item No.	Descriptions	Unit	Rate (Rs.)
3.1*	**Excavation in Soil (by Manual Means.)** Excavation for roadway in soil using including loading in tipper for carrying of cut earth to embankment site and unloading with all lifts and lead upto1000 meters as per relevant clauses of section 300.	**Cum.**	**231.00**
3.2	**Excavation in Soil (by Mechanical Means.)** Excavation for roadway in soil using mechanical means including loading in tipper for carrying of cut earth to embankment site and unloading with all lifts and lead upto 1000 meters as per relevant clauses of section 300.	**Cum.**	**112.00**
3.3	**Excavation in ordinary rock** including loading in a truck and carrying of excavated material to embankment site with in all lifts and leads upto 1000 meters as per relevant clauses of section 300.	**Cum.**	**254.00**
3.4	**Excavation in Hard Rock** (requiring blasting) with disposal upto 1000 meters (Excavation for roadway in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads up to 1000 meters as per relevant clauses of section 300.	**Cum.**	**259.00**
3.5	**Excavation in Hard Rock (blasting prohibited)** (Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 meters, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections as per relevant clauses of section-300.	**Cum.**	**392.00**
3.6	**Excavation in Hard Rock (controlled blasting)** with disposal upto 1000 meters (Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads up to 1000 meters as per relevant clauses of section-300.	**Cum.**	**383.00**
3.7	**Excavation in Marshy Soil** (Excavation for roadway in marshy soil with hydraulic excavator including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 meters, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections as per relevant clauses of Section-300.)	**Cum.**	**113.00**
3.8	**Removal of Unserviceable Soil** with Disposal up to 1000 meters including loading and unloading.	**Cum.**	**101.00**
3.9	Add extra over item 3.1 to 3.2 & 3.7 to 3.8 above for transportation for disposal beyond 1.0 Km lead.	**Cum.**	**Vide item No. 1.1 & 1.2 of Chapter-1**
3.10	**Scarifying Existing Granular** Surface to a depth of 50 mm (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and	**Sqm.**	**30.00**

Item No.	Descriptions	Unit	Rate (Rs.)
	leads up to 1000 meters) as per clause 305.4.3.		
3.11	**Scarifying existing bituminous** surface to a depth of 50 mm (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead up to 1000 meters) as per clause 305.4.3.	**Sqm.**	**26.00**
3.12	**Construction of embankment with Material Obtained from Borrow Pits/Borrow Area** (Construction of embankment with approved material/selected soil having C.B.R.>5 (unless specified otherwise in the contract) obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2)	**Cum.**	**306.00**
3.13	**Construction of sub-grade with Material Obtained from Borrow Pits/Borrow Area** (Construction of sub-grade with approved material/selected soil having C.B.R.>8 (unless specified otherwise in the contract) obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2)	**Cum.**	**337.00**
3.14	**Construction of Embankment with Material Deposited from Roadway Cutting** (Construction of embankment with approved materials having C.B.R.>5 (unless specified otherwise in the contract) deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)	**Cum.**	**97.00**
3.15	**Compacting Original Ground**		
(i)	**Compacting Original Ground supporting sub-grade** Loosening of the ground upto a level of 500 mm below the subgrade level , watered, graded and compacted in layers to meet requirement of table 300-2 for sub grade construction.	**Cum.**	**55.00**
(ii)	**Compacting Original Ground supporting embankment** Loosening, leveling and compacting original ground to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at O.M.C. and then compacted by rolling so as to achieve minimum dry density as given in table 300-2 for embankment construction.	**Cum.**	**32.00**
3.16	**Surface Drains in Soil** (Construction of unlined surface drains of average cross sectional area 0.40 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of 50 meters (average lead 25 meters)	**Meter.**	**58.00**
3.17	**Surface Drains in Ordinary Rock** (Construction of unlined surface drain of average cross sectional area 0.4 sqm in ordinary rock to specified lines, grades, levels and dimensions as per approved design and to the requirement of clause 301 & 309. Excavated material to be used in embankment at site.)	**Meter.**	**118.00**

Item No.	Descriptions	Unit	Rate (Rs.)
3.18	**Sub Surface Drains with Perforated Pipe** (Construction of subsurface drain with perforated pipe of 100 mm internal diameter of cement concrete closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilized in roadway at site)	**Meter.**	**555.00**
3.19	**Aggregate Sub- Surface Drains** (Construction of aggregate sub surface drain 300 mm x 450 mm with aggregates conforming to table 300-4, excavated material to be utilized in roadway)	**Meter.**	**143.00**
3.20	**Construction of RCC open drain**		
(i)	**Construction of RCC open drain with minimum size of 1m x 1m inside dimension and size varying as per site requirement** lined with 150 mm thick RCC M-20 walls ,150 mm thick CC, M-20 foundation, over 100 mm thick (Av) levelling course in PCC M-15 including excavation, dressing of sides and bottom , providing HYSD reinforcement consisting of 10mm dia horizontal bars @ 150 mm c/c and L-shaped 10 mm dia vertical bars @ 150 mm c/c (L= 1400 m) including cutting,bending and binding wires, placing in position, providing shuttering and concreting by using cocrete mixer , compaction by vibration etc complete as per drawings and technical specifications.	**Meter.**	**4618.00**
(ii)	**Construction of RCC open drain with minimum size of 0.60m x 0.60m inside dimension and varying as per site requirement less than 1m x 1m inside dimension** lined with 120 mm thick RCC M-20 walls ,120 mm thick CC, M-20 foundation, over 100 mm thick (Av) levelling course in PCC M-15 including excavation, dressing of sides and bottom , providing HYSD reinforcement consisting of 10mm dia horizontal bars @ 150 mm c/c and L-shaped 10 mm dia vertical bars @ 150 mm c/c (L= 800 m) including cutting,bending and binding wires, placing in position, providing shuttering and concreting by using concrete mixer , compaction by vibration etc complete as per drawings and technical specifications.	**Meter.**	**2429.00**
(iii)	Providing and laying 15 cm (Average) thickness hammer dressed dry stone V-shaped road side surface drains as per MoRTHs specifications with all leads and lifts complete. (Refer to Manual for Hill Roads IRC:SP:48)	**Sqm.**	**520.00**
3.21	**Construction of Rock fill Embankment** (Construction of rock fill embankment with broken hard rock fragments obtained from roadway excavation of size not exceeding 300 mm laid in layers not exceeding 500 mm thick including filling of surface voids with stone spalls, blinding top layer with granular material, rolled with vibratory road roller, all complete as per clause 313)	**Cum.**	**60.00**
3.22	**Embankment Construction with Fly ash/Pond ash available from coal or lignite burning Thermal Plants as waste material.** (Construction of embankment with fly ash	**Cum.**	**579.00**

Item No.	Descriptions	Unit	Rate (Rs.)
	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 200mm thickness each at OMC, all as specified in IRC:SP:58 and as per approved plans.)		
3.23	**Providing and laying aggregate and sand cover for aggregate drains** with all leads and lifts as per clause 309.3.6 (only aggregate crushed in mechanical crusher shall be used and measurement from outer ends of sand cover.)	**Cum.**	**1207.00**
3.24	**Providing Chute drains** consisting of NP-2 RCC half round, 300 mm dia pipes , laid over block of C.C. 1:3:6 (20mm and down aggregates) size 450 mm x 265 mm laid over filter media (measured and paid separately) including all false work etc. complete.	**Meter.**	**2229.00**
3.25	**Construction of RCC Drain/Cover/Chamber**		
(i)	**Excavation for drain** (Earth work in excavation for drain/chamber as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)	**Cum.**	**231.00**
(ii)	**Construction of RCC drain/chamber cover**, placing in position, providing shuttering and concreting by using concrete mixer, compaction by vibration etc complete as per drawings and technical specifications excluding reinforcement. with RCC M-20	**Cum.**	**5043.00**
(iii)	**Supplying, Fitting and Placing un-coated HYSD bar Reinforcement** in drain/cover/chamber complete as per Drawing and Technical Specifications.	**MT.**	**80120.00**

Note:- * This item to be executed with prior permission of Chief Engineer.

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

Item No.	Descriptions	Unit	Rate (Rs.)
4.1	**Granular Sub-base as per Table:- 400-1**		
	Construction of granular sub-base by providing graded Material, , carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface watering, rolling and compacting with vibratory power roller at OMC to achieve the desired density, complete as per clause 401		
A	**Plant mix method** (with Mechanically crushed stone only)		
(i)	Grading-III Material	**Cum.**	**1514.00**
(ii)	Grading-IV Material	**Cum.**	**1534.00**
(iii)	Grading-V Material	**Cum.**	**1561.00**
(iv)	Grading-VI Material	**Cum.**	**1478.00**
4.2	**Lime Stabilization for Improving Sub-grade** (Laying and spreading available soil in the sub-grade on a prepared surface, pulverizing, mixing the spread soil in place with rotavator with 3% slaked lime having minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub-grade as per clause-402.)	**Cum.**	**385.00**
4.3	**Lime Treated Soil for Sub-Base** (Providing, laying and spreading soil on a prepared sub-grade, pulverizing, mixing the spread soil in place with rotavator with 3 % slaked lime with minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98%of the max dry density to form a layer of sub base as per clause-402.)	**Cum.**	**574.00**
4.4	**Cement Flyash Treated Soil Sub-Base/ Base** (Providing, laying and spreading soil on a prepared sub-grade, pulverizing, adding the designed quantity of cement and flyash 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 clause-403.)	**Cum.**	**812.00**
4.5	**Cement Flyash 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 prepared sub-grade, adding the designed quantity of cement and flyash to the spread Material, 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 clause-403.)		
(i)	For Sub-Base course	**Cum.**	**1840.00**
(ii)	For Base course	**Cum.**	**1742.00**
4.6	**Cement Treated Crushed Stone Sub base** (Construction of granular sub-base by providing graded Material, mixing with cement in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with Mechanical Paver on prepared surface and compacting with vibratory power roller to achieve the desired density, complete		

Item No.	Descriptions	Unit	Rate (Rs.)
	as per clause 401)		
A	**Plant Mix Method (Using by Mechanical Paver)**		
(i)	**Cement Treated Crushed Stone Sub base (Grading-III Material)**	**Cum.**	**2022.00**
(ii)	**Cement Treated Crushed Stone Sub base (Grading-IV Material)**	**Cum.**	**2003.00**
B	**By Mix in Place Method** (Using by Soil Stabilizer)		
(i)	**Cement Treated Crushed Stone Sub base (Grading-III Material)**	**Cum.**	**2346.00**
(ii)	**Cement Treated Crushed Stone Sub base (Grading-IV Material)**	**Cum.**	**2296.00**
4.7	**Making 50 mm x 50 mm Furrows** (Making 50 mm x 50 mm furrows, at 45^{o} inclination to the center line of the road and at one meter interval in the existing thin bituminous wearing coarse including sweeping and disposal of excavated material within 1000 meters lead) (i) 50 mm deep furrow cutting	**Sqm**	**10.00**
4.8	**Inverted Choke** (Construction of inverted choke by providing, laying, spreading and compacting screening B type/ coarse sand of specified grade in uniform layer on a prepared surface with motor grader and compacting with power roller etc)	**Cum**	**1208.00**
4.9	**Crushed Cement Concrete Sub-base / Base** (Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.9 transporting the aggregates obtained from breaking of cement concrete slabs., laying and compacting for sub base/ base course as per clause 405.)	**Cum**	**410.00**
4.10	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density as per clause 406.)	**Cum**	**1603.00**
4.11	**Construction of Median and Island with Soil Taken from Roadway Cutting** (Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause-408.)	**Cum**	**269.00**
4.12	**Construction of Median and Island with Soil Taken from Borrow Areas** (Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause-408).	**Cum**	**347.00**
4.13	**Construction of Shoulders** (Construction of shoulders as per clause 408 with selected soil from borrow pits / borrow areas having CBR not less than 12 and shall have L.L. and P.I. not more than 25% and 6% respectively, inclusive of all leads and lifts, including clearing and scrapping of existing surface, providing required cross fall, compacting. watering rolling and		

Item No.	Descriptions	Unit	Rate (Rs.)
	royalty charges etc. complete.		
A	With vibratory roller	**Cum**	**393.00**
B	With smooth wheeled roller	**Cum**	**377.00**
4.14	**Granular Shoulders** (Construction of granular shoulder at top 150mm of earthen shoulder shall be well graded mix of at least 30% of granular sub-base material of grading-III as per clause 401 and moorum/gravel or soil and combination having soaked CBR value of not less than 30%. The granular layer shall be compacted to at least 98% of mix dry density of material as determined as per IS:2720 (Part-B))	**Cum**	**660.00**
4.15	**Providing paving to shoulders** including dressing, leveling to camber and compacting the base etc. with :		
(i)	Hammer dressed 200 mm thick (average) stones, gaps to be filled with spalls hammered and river sand.	**Sqm**	**730.00**
(ii)	Bricks (laid in 100 to 112 mm thickness) of crushing strength not less than 70 kg/cm^2 when tested to Indian Standards with joints filled with river sand.	**Sqm**	**471.00**
4.16	**Providing & laying precast interlocking concrete blocks** of minimum compressive strength of 300 kg/sq.cm and approved size , shape/ pattern over coarse sand bed of thickness upto 40 mm and joints thick filled with fine sand including leveling with surface vibrator, temping and sweeping etc. complete as per IRC-SP-63-2004.		
A)	**60mm thick Plain precast interlock concrete block**	**Sqm**	**565.00**
B)	**80mm thick Plain precast interlock concrete block**	**Sqm**	**665.00**
C)	**80mm thick Polymer coated coloured precast interlock concrete blocks**	**Sqm**	**807.00**
D)	**60mm thick Polymer coated coloured precast interlock concrete blocks**	**Sqm**	**722.00**
4.17	**Footpaths and Separators** (Construction of footpath/separator by providing a 150 mm compacted granular sub base as per clause 401 and 75 mm thick cement concrete base with PCC grade M-15, over laid with precast cement concrete tiles 25mm thick fixed in 20mm thick cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel excluding cost of GSB.) as per clause 410.	**Sqm**	**1889.00**
4.18	**Providing and fixing guard stones** 200 x 200 x 900 mm made of precast RCC M-20 grade fixed at 300 mm into the ground in P.C.C. 1:3:6 blocks of size 400 x 400 x 400 mm and given two coats of paint with white and black bands including excavation.	**Each**	**478.00**

Item No.	Descriptions	Unit	Rate (Rs.)
4.19	**Providing and fixing kerb stones** 100 mm thick and 600 mm wide chisel dressed cut stones fixed in CC 1:3:6 (block size 250 x 225 mm) including all excavation.	**RM**	**395.00**
4.20	**Providing 50 mm thick flag stone flooring** including bedding in CM 1:6 over 100 mm thick CC 1:3:6 including cement pointing 1:3 with pigment to match the colour of stone as per clause-410 including dressing of stones and all excavation complete.	**Sqm**	**971.00**
4.21	**Lime, Fly ash stabilized soil sub-base** (Construction of Sub-base using lime-fly ash 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%, fly ash to conform to gradation as per clause 4.3 of IRC: 88-1984, lime + fly ash content ranging between 10 to 30%, the minimum un-confined compressive strength and CBR value after 28 days curing and 4 days soaking to be 7.5kg/cm^2 and 25% respectively, all as specified in IRC: 88:1984.)	**Cum**	**610.00**

CHAPTER- 5
BASES AND SURFACE COURSES (BITUMINOUS)

Item No.	Descriptions	Unit	Rate (Rs.)
5.1	**Prime coat** (Providing and applying primer coat with oil based bitumen emulsion (SS-1, grade confirming to IS:8887) on prepared surface of granular Base including clearing of road surface and spraying primer using mechanical means as per clause 502.		
	(i) on WBM/WMM surface @0.85 Kg/sqm.	**Sqm**	**49.00**
	(ii) on Stablized soil @ 1.05 Kg/Sqm.	**Sqm**	**56.00**
5.2	**Tack coat** Providing and applying tack coat with bitumen emulsion (RS-1, grade confirming to IS:8887) using emulsion pressure distributor on the prepared bituminous/granular surface cleaned with mechanical broom and as per clause 503.		
	(i) Normal Bituminous surface @ 0.25 kg /Sqm	**Sqm**	**15.00**
	(ii) Granular surfaces treated with primes @ 0.30 kg /Sqm	**Sqm**	**17.00**
	(iii) Cement concrete Pavement @ 0.35 kg/Sqm	**Sqm**	**20.00**
5.3	**Bituminous Macadam** (Providing and laying bituminous macadam as per clause 504 with mixed prepared in minimum 100-120 TPH capacity batch type hot mix plant using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction)		
A	**With sensor paver finisher**		
(i)	for Grading-I (40 mm nominal maximum size, bitumen content 3.30%)	**Cum**	**5928.00**
(ii)	for Grading-II (19 mm nominal maximum size, bitumen content 3.40%)	**Cum**	**6126.00**
5.4	**Bituminous Macadam** (Providing and laying bituminous macadam as per clause 504 with mixed prepared in minimum 40-60 TPH capacity hot mix plant using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction)		
A	**With mechanical paver finisher**		
(i)	for Grading-I (40 mm nominal maximum size, bitumen content 3.30%)	**Cum**	**5954.00**
(ii)	for Grading-II (19 mm nominal maximum size, bitumen content 3.40%)	**Cum**	**6146.00**
5.5	**Dense Bituminous Macadam** (Providing and laying dense graded bituminous macadam with minimum 100-120 TPH batch type HMP using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per cent by weight of total mix and cement as a filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 505 complete in all respects.)		

Item No.	Descriptions	Unit	Rate (Rs.)
A	**With sensor paver finisher**		
(i)	for Grading I (37.5 mm nominal size, bitumen content 4.0%)	**Cum**	**7193.00**
(ii)	for Grading II (26.5 mm nominal size bitumen content 4.50%)	**Cum**	**7770.00**
(iii)	**Add extra to the Rate of Dense Bituminous Macadam** with bitumen, if Bitumen Grade VG-40 is used instead of Bitumen Grade VG-30 in the items above.	**Cum**	**4%**
5.6	**Dense Bituminous Macadam** (Providing and laying dense graded bituminous macadam with minimum 40-60 TPH batch type HMP using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per cent by weight of total mix and cement as a filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 505 complete in all respects.)		
B	**With mechanical paver finisher**		
(i)	for Grading-I (37.5 mm nominal size, bitumen content 4.0%)	**Cum**	**7153.00**
(ii)	for Grading-II (26.5 mm nominal size bitumen content 4.50%)	**Cum**	**7796.00**
(iii)	**Add extra to the Rate of Dense Bituminous Macadam** with bitumen, if Bitumen Grade VG-40 is used instead of Bitumen Grade VG-30 in the items above.	**Cum**	**4%**
5.7	**Bituminous Concrete** (Providing and laying bituminous concrete with minimum 100-120 TPH capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.0 to 6.0% by weight of total mix of mix and cement as a filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in all respects)		
A	**With sensor paver finisher**		
(i)	for Grading-I(19 mm nominal size) with bitumen 5.5 %	**Cum**	**9129.00**
(ii)	for Grading-I(19 mm nominal size) with CRMB 60- 5.5 %	**Cum**	**9601.00**
(iii)	for Grading-II (13.2 mm nominal size) with bitumen 6.0 %	**Cum**	**9576.00**
(iv)	for Grading-II (13.2 mm nominal size) with CRMB 60- 6.0 %	**Cum**	**10093.00**
(v)	**Add extra to the Rate of** Bituminous Concrete with bitumen, if Bitumen Grade VG-40 is used instead of Bitumen Grade VG-30 in the items above.	**Cum**	**4%**
5.8	**Bituminous Concrete** (Providing and laying bituminous concrete with minimum 40-60 TPH capacity hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.0 to 6.0% by weight of total mix of mix and cement as a filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects)		
B	**With mechanical paver finisher**		
(i)	for Grading-I (19 mm nominal size) with bitumen 5.5 %	**Cum**	**8963.00**

Item No.	Descriptions	Unit	Rate (Rs.)
(ii)	for Grading-I (19 mm nominal size) with CRMB 60- 5.5 %	**Cum**	**9412.00**
(iii)	for Grading-II (13.2 mm nominal size) with bitumen 6.0 %	**Cum**	**9345.00**
(iv)	for Grading-II (13.2 mm nominal size) with CRMB 60- 6.0 %	**Cum**	**9935.00**
(v)	**Add extra to the Rate of** Bituminous Concrete with bitumen, if Bitumen Grade VG-40 is used instead of Bitumen Grade VG-30 in the items above.	**Cum**	**@4%**
5.9	**Bituminous Concrete by using of Plastic waste** (Providing and laying bituminous concrete with 100-120 TPH batch type mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder VG-40 @ (95% and Plastic waste 5%) @ 5.4 percent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic pave finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 509 complete in all respects.		
A	**With sensor paver finisher** **Grading-II Material (13 mm Nominal Size)**	**Cum**	**9802.00**
5.10*	**Surface Dressing** (Providing and laying surface dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with pneumatic type roller to give proper surface finish as per clause 509.		
(i)	19 mm nominal size chipping with bitumen @ 1.2kg/m^2	**Sqm**	**79.00**
(ii)	13 mm nominal size chipping with bitumen @ 1.0kg/m^2	**Sqm**	**62.00**
5.11	**Open-Graded Premix Surfacing** (Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using 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 smooth wheeled roller 8-10 tonne capacity, finished to required level and grades as per clause 510) **With Mechanical paver**		
(i)	Case - I: Mechanical method using Penetration grade Bitumen and 40-60 HMP of appropriate capacity not less than 35 tonnes/hour .	**Sqm**	**116.00**
(ii)	Case-II: Mechanical method using cationic bitumen emulsion.	**Sqm**	**162.00**
5.12	**Close Graded Premix Surfacing/Mixed Seal Surfacing** (Mechanical means using minimum 40-60 TPH capacity of HMP. Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness using bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade, complete as per clause 508)		
I.	**With sensor paver finisher**		
A	With bitumen		
i)	Type-A (11.2 mm to 0.09 mm size aggregates)	**Sqm**	**153.00**

Item No.	Descriptions	Unit	Rate (Rs.)
ii)	Type-B (13.2 mm to 0.09 mm size aggregates)	**Sqm**	**138.00**
B	With CRMB-60		
i)	Type-A (11.2 mm to 0.09 mm size aggregates)	**Sqm**	**161.00**
ii)	Type-B (13.2 mm to 0.09 mm size aggregates)	**Sqm**	**145.00**
II.	**With mechanical paver finisher**		
A	With bitumen		
i)	Type-A (11.2 mm to 0.09 mm size aggregates)	**Sqm**	**152.00**
ii)	Type-B (13.2 mm to 0.09 mm size aggregates)	**Sqm**	**137.00**
B	With CRMB-60		
i)	Type-A (11.2 mm to 0.09 mm size aggregates)	**Sqm**	**160.00**
ii)	Type-B (13.2 mm to 0.09 mm size aggregates)	**Sqm**	**144.00**
5.13	**Seal Coat** (Providing and laying seal coat for sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall including rolling and finishing using Type-A and B seal coats as per clause 511)		
A	Type-A (Providing and laying liquid seal coat comprising of an application of a layer of **binder** followed by a cover of stone chips of 6.7 mm size)	**Sqm**	**61.00**
B	Type-B		
(i)	Providing and laying of premix sand seal coat with minimum 40-60 TPH HMP of appropriate capacity using crushed stone chipping (passing through 2.36mm size sieve) and with bitumen as binder.	**Sqm**	**47.00**
(ii)	Providing and laying of premix sand seal coat using crushed stone chipping (passing through 2.36mm size sieve) and with cationic emulsion as binder, by mechanical means.	**Sqm**	**65.00**
5.14	**Mastic Asphalt** (Providing and laying **25mm thick** mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-39 prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with fine-grained hard stone chipping of 13.2 mm nominal size pre- coated with bitumen at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100^0C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause-516.)	**Sqm**	**603.00**
5.15	**Mastic Asphalt** (Providing and laying **12mm thick** mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-39, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with fine-grained hard stone chipping of 9.5 mm nominal size pre- coated with bitumen at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100^0C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause-516.)	**Sqm**	**335.00**

Item No.	Descriptions	Unit	Rate (Rs.)
5.16	**Slurry Seal** Providing and laying slurry seal consisting of a mixture of mineral aggregates, Portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface complete as per clause 512 for following types as given in table 500-25.		
(i)	Type-I (Thickness 2 - 3 mm)	**Sqm**	**91.00**
(ii)	Type-II (Thickness 4 - 6 mm)	**Sqm**	**72.00**
(iii)	Type-III (Thickness 6 -8 mm)	**Sqm**	**57.00**
5.17	**Fog Spray (**Providing and applying low viscosity bitumen emulsion SS-1 for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing complete as per clause 513.	**Sqm**	**43.00**
	Add extra if blinded with grit of 3 mm size & under coated with 2% of the emulsion by weight.	**Sqm**	**5.00**
5.18	**Crack Prevention Courses**		
(i)	**Stress Absorbing Membrane (SAM) crack width less than 6 mm** (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width below 6 mm after cleaning with a mechanical broom, using modified binder sprayed at the rate of 9 kg per 10 sqm and spreading 5.6 mm crushed stone aggregates @ 0.11 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished complete as per clause 517)	**Sqm**	**60.00**
(ii)	**Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm** (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished complete as per clause 517)	**Sqm**	**71.00**
(iii)	**Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50%** (Providing and laying a single coat of a stress absorbing membrane over a cracked road surface, with crack width above 9 mm and cracked area above 50 % after cleaning with a mechanical broom, using modified binder sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished complete as per clause 517)	**Sqm**	**94.00**
5.19	**Open-Graded Premix Surfacing (By manual means)** (Providing, laying and rolling of open-graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates using bitumen/cationic emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades. Work shall be executed as per clause 510 except laying by manual means instead of mechanical mixing		

Item No.	Descriptions	Unit	Rate (Rs.)
	and laying.)		
(i)*	Case-I :- Using Bitumen	**Sqm**	**118.00**
(ii)	Case-II :- Using Bitumen Emulsion MS grade	**Sqm**	**164.00**
5.20	**Seal Coat Type-B (By manual means)** (Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type-B seal coat using crushed stone chipping passing through 2.36mm size sieve, using bitumen / cationic emulsion as binder. Work shall be executed as per clause 511 except laying by manual means instead of mechanical mixing and laying.)		
(i) *	Case-I:- Using Bitumen	**Sqm**	**45.00**
(ii)	Case-II :- Using cationic Bitumen Emulsion	**Sqm**	**69.00**
5.21	**Micro-surfacing Type-II:** **Providing and laying 4 to 6 mm thick micro-surfacing layer** as wearing course in single layer using crushed aggregates @ 9.0 Kg/Sqm manufactured Sand (Crushed stone dust with coarse aggregates as per required grading) with specific size as per table-3 of IRC:SP:81-2008 using Modified Cationic Bitumen @13.5% by weight of aggregates as per Table 8 of IRC:SP:81-2008, Break Control Additive @2% by weight of aggregate, purified water with pH 6-7 @ 12% by weight of aggregate & mineral filler @ 2.0% by weight of aggregate using specialized micro-surfacing Paver finisher and other materials, machinery etc complete as per clause 514).	**Sqm**	**181.00**
5.22	**Micro-surfacing Type-III:** **Providing and laying 6 to 8 mm thick micro-surfacing layer** as wearing course in single layer using crushed aggregates @ 12.0 Kg/Sqm manufactured Sand (Crushed stone dust with coarse aggregates as per required grading) with specific size as per table-3 of IRC:SP:81-2008 using Modified Cationic Bitumen @13% by weight of aggregates as per Table 8 of IRC:SP:81-2008, Break Control Additive @2% by weight of aggregate, purified water with pH 6-7 @ 12% by weight of aggregate & mineral filler @ 2.0% by weight of aggregate using specialized micro-surfacing Paver finisher and other materials, machinery etc complete as per clause 514).	**Sqm**	**215.00**
5.23	**Recycling of Bituminous Pavement with Central Recycling Plant**		
	Recycling pavement by cold milling of existing bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 per cent of the required quantity, hauling and stock piling the reclaimed material near the central recycling plant after carrying out necessary checks and evaluation, adding fresh material including rejuvenators as required, mixing in a hot mix plant, transporting and laying at site and compacting to the required grade, level and thickness, all as specified in clause 519.		
(i)	**With sensor paver finisher**	Cum	**6132.00**
(ii)	**With Mechanical paver finisher**	Cum	**6021.00**

Item No.	Descriptions	Unit	Rate (Rs.)
(iii)	**Add extra to the Rate of** Bituminous Concrete with bitumen, if Bitumen Grade VG-40 is used instead of Bitumen Grade VG-30 in the items above.	**Cum**	***@4%***

Note:- (*) This item to be executed with prior permission of Chief Engineer.

CHAPTER- 6
CEMENT CONCRETE PAVEMENTS

Item No.	Descriptions	Unit	Rate (Rs.)
6.1	**Dry Lean Cement Concrete Sub-base** as per IRC:SP-49 (Construction of dry lean cement concrete Sub-base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 26.5 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing as per clause 601.)	**Cum**	**2754.00**
6.2	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement as per IRC:58 over a prepared sub-base, coarse and fine aggregate conforming to IS:383 and graded as per table 600-3 mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing as per clause 602.)		
(i)	With Cement concrete grade M-40 and minimum cement content @ 400 kg/cum.	**Cum**	**5616.00**
6.3	**Construction of Base/Sub-base of pavement with lean concrete–flyash.** (Construction of Base/sub-base using cement, sand, fly ash and as per clause 601 of MoRTH specification, coarse aggregates proportioned as per table-4 of IRC:74:1979 with water cement ratio and slump as defined in the said table, minimum 28 days compressive strength of 158 Kg/cm^2, mix prepared in a batching and mixing plant and compacted with a vibratory roller 8-10 tonnes capacity within the time limit laid down vide clause 7.6.3 of IRC:74:1979, construction joints properly formed at the end of day's work, cured for 14 days, all as specified in IRC:74:1979 and as per approved plans.)	**Cum**	**2658.00**
6.4	**Cement–Fly ash concrete pavement. (Grade M-40)** (Construction of unreinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with cement, coarse and fine aggregate conforming to IS:383, and gradation as per table 600-3 with minimum cement content @ 350 kg/cum and fly ash @ 15% by weight of cement as per IRC-68, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant	**Cum**	**5627.00**

Item No.	Descriptions	Unit	Rate (Rs.)
	primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing as per clause 602.)		
6.5	**Providing and laying cement concrete** for plain concrete/ reinforced concrete i/c form work, shuttering complete in as per drawings and specifications (For other / village roads)		
(i)	P.C.C. M-10	**Cum**	**3454.00**
(ii)	P.C.C. M-15	**Cum**	**4379.00**
(iii)	P.C.C. M-25	**Cum**	**5108.00**
(iv)	P.C.C. M-30	**Cum**	**5179.00**

CHAPTER- 7

GEOSYNTHETICS AND SUB-SURFACE DRAIN

Item No.	Descriptions	Unit	Rate (Rs.)
7.1	**Sub-Surface Drain with Geotextiles**		
	Construction of sub surface drain 200 mm dia using geotextiles 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 drawings including excavation and backfilling.	**RM**	**1144.00**
7.2	**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 constructed as per clause 702.3 and 309.3.5 including excavation and backfilling.	**RM**	**984.00**
7.3	**Laying Paving Fabric Beneath a Pavement Overlay** (Providing and laying paving fabric as per clause 708 with physical requirements as per table: 700-16 over a tack coat of paving grade Bitumen of VG-10, laid at the rate of 1 kg/ 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 laid before cooling of tack coat, brooming and rolling of surface with pneumatic roller to maximize paving fabric contact with pavement surface)	**Sqm**	**219.00**
7.4	**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 retained by the wall.		
(A)	Assembling joining and laying of reinforcing elements with		
(i)	Galvanized carbon steel strips	**meter**	**533.00**
(ii)	Copper Strips	**meter**	**395.00**
(iii)	Aluminium Strips	**meter**	**289.00**
(iv)	Stainless steel strips	**meter**	**472.00**
(v)	Glass reinforced polymer/fibre reinforced polymer/polymeric strips	**meter**	**595.00**
(vi)	Synthetic geogrids / geotextiles	**sqm**	**368.00**
(B)	Facing elements of RCC	**sqm**	**1232.00**
Note:	*The compacted earth filling to be retained shall form part of embankment and the same is to be worked out and provided separately as per clause 305.*		

CHAPTER- 8
TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	Descriptions	Unit	Rate (Rs.)
8.1	**Cast in Situ Cement Concrete M-20 kerb** (Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in PCC M-20 grade on PCC M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 409)	**Meter**	**219.00**
8.2	**Cast in Situ Cement Concrete M-20 Kerb with Channel** (Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M-20 grade PCC on M-10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M-20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 409)	**Meter**	**404.00**
8.3	**Printing new letters and figures** of any shade. (Printing new letters and figures of any shade with synthetic enamel paint, Black or other approved colour to give an even shade as per clause 800.		
(i)	Hindi: (Matras, Comas and the like not to be measured and paid for half letter shall be counted as half letter.	per cm Height per letter	**0.90**
(ii)	English and Roman: (Hyphens and the like not to be measured)	per cm Height per letter	**0.60**
8.4	**Retro-reflectorized Traffic signs** (Retro-reflectorized Traffic signs (Providing and fixing of retro-reflectorized cautionary, mandatory and informatory sign as per IRC:67 made of retro-reflective type sheeting vide clause 801.3, fixed over aluminum sheeting of required thickness supported on a mild steel frame of size 40 x 40 x 5 mm and mild steel angle iron post 75 mm x75 mm x 6mm firmly fixed to the ground by means of properly designed foundation with M-15 grade cement concrete 45 cm x 45cm x 60cm, 60 cm below ground level as per approved drawing and painting all components of the signs and supports as per clause 7.2 of IRC:67)		
A	**Made of Class-C Micro Prismatic Grade Sheeting of Type-XI** (for National Highways and State Highways)		
a)	**With Aluminum Sheeting of 2 mm thickness**		
(i)	1200 mm equilateral triangle	**Each**	**9260.00**
(ii)	900 mm equilateral triangle	**Each**	**5982.00**
(iii)	750 mm equilateral triangle	**Each**	**4632.00**

Item No.	Descriptions	Unit	Rate (Rs.)
(iv)	900 mm x 700 mm rectangular	**Each**	**9744.00**
(v)	800 mm x 600 mm rectangular	**Each**	**7479.00**
(vi)	1200 mm high octagon	**Each**	**16515.00**
(vii)	900 mm high octagon	**Each**	**10058.00**
(viii)	750 mm high octagon	**Each**	**7527.00**
(ix)	900 mm circular	**Each**	**9608.00**
(x)	750 mm circular	**Each**	**7187.00**
b)	**With Aluminum Sheeting of 1.5 mm thickness**		
(i)	600mm equilateral triangle	**Each**	**3461.00**
(ii)	600mm circular	**Each**	**5026.00**
(iii)	600 mm x 600 mm square	**Each**	**5829.00**
8.5	**Direction and Place Identification signs upto 0.9 sqm size board**. (Providing and erecting direction and place identification retro-reflectorized sign as per IRC:67 made of retro-reflective type sheeting and vide clause 801.3, fixed over aluminum sheeting, 2 mm thick with area not exceeding 0.9 sqm and fixed on a mild steel frame of size 40 x 40 x 5 mm, supported on a mild steel single angle iron post of size 75 x 75 x 6 mm, firmly fixed to the ground with M-15 grade cement concrete 45 x 45 x 60cm, 60cm below ground level as per approved drawing)		
A	Made of Class-C Micro Prismatic Grade Sheeting of Type-XI (for National Highways and State Highways)	**Sqm**	**14202.00**
B	Made of Class-B High Intensity Micro Prismatic Grade Sheeting of Type IV (for MDR)	**Sqm**	**10182.00**
C	Made of Class-A High Intensity Micro Prismatic Grade Sheeting of Type I (for ODR & Village Roads)	**Sqm**	**7887.00**
8.6	**Direction and Place Identification signs with size more than 0.9 sqm size board. (**Providing and erecting direction and place identification sign as per IRC:67 made of retro-reflective type sheeting and vide clause 801.3, fixed over aluminum sheeting, 2 mm thick with area exceeding 0.9 sqm and fixed on a mild steel frame of size 40 x 40 x 5 mm, supported on 2 Nos. mild steel angle iron posts of size 75 x 75 x 6 mm, firmly fixed to the ground with M-15 grade cement concrete 45 x 45 x 60cm, 60cm below ground level as per approved drawing)		
A	Made of Class-C Micro Prismatic Grade Sheeting of Type-XI (for National Highways and State Highways)	**Sqm**	**14362.00**

Item No.	Descriptions	Unit	Rate (Rs.)
B	Made of Class-B High Intensity Micro Prismatic Grade Sheeting of Type-IV (for MDR)	**Sqm**	**10259.00**
C	Made of Class-A High Intensity Micro Prismatic Grade Sheeting of Type-I (for ODR & Village Roads)	**Sqm**	**7999.00**
8.7	**Overhead Signs** (Providing and erecting overhead signs with a 2 mm thick corrosion resistant aluminum alloy sheet reflectorized with high intensity retro-reflective sheeting of Class-C Micro Prismatic Grade Sheeting of Type-XI with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.6 over a designed support system of aluminum alloy or galvanized steel trestles and trusses of sections and type as per structural design requirements and approved plans)		
A	Truss and Vertical Support	**Tonne**	**79226.00**
B	Aluminum alloy plate for over head sign	**Sqm**	**12398.00**
8.8	**Painting on Concrete Surfaces**		
A	**Two coats on new surfaces** (Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces)	**Sqm**	**78.00**
B	**One coat on old surfaces** (Painting one or two coats after cleaning all dirt & dust, filling the surface with synthetic enamel paint in all shades on old concrete surfaces)	**Sqm**	**63.00**
8.9	**Painting on Steel Surfaces** (Providing and applying two coats of ready-mix paint of approved brand on steel surface after thorough cleaning of surface to give an even shade)	**Sqm**	**64.00**
8.10	**Painting on Wood Surfaces**		
	Providing and applying two coats of ready-mix paint of approved brand on wood surface after thorough cleaning of surface to give an even shade.	**Sqm**	**71.00**
8.11	**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work** (Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control)		
(i)	Over 10 cm in width	**Sqm**	**128.00**
(ii)	Up to 10 cm in width	**Sqm**	**110.00**
8.12	**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work** (Painting lines, dashes, arrows etc on roads in two coats on old work with ready mixed road marking paint confirming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control)		
(i)	Over 10 cm in width	**Sqm**	**88.00**
(ii)	Up to 10 cm in width	**Sqm**	**95.00**
8.13	**Road Marking with Hot Applied Thermoplastic Compound with Reflectorizing Glass Beads on Bituminous Surface** (Providing and laying of hot applied thermoplastic	**Sqm**	**707.00**

Item No.	Descriptions	Unit	Rate (Rs.)
	compound 2.5 mm thick including reflectorizing glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35. The finished surface to be level, uniform and free from streaks and holes.		
8.14	**Kilo Meter Stone** (Reinforced cement concrete M-15grade kilometer stone of standard design as per IRC:8, fixing in position including painting and printing etc)		
(i)	5th kilometer stone (precast)	**Each**	**2836.00**
(ii)	Ordinary Kilometer stone (Precast)	**Each**	**1685.00**
(iii)	Hectometer stone (Precast)	**Each**	**465.00**
8.15	**Painting, figuring and numbering as per IRC specification complete for**		
(i)	5th kilometer stone	**Each**	**365.00**
(ii)	Ordinary Kilometer stone	**Each**	**160.00**
(iii)	Hectometer stone	**Each**	**24.00**
(iv)	Boundary stone	**Each**	**30.00**
8.16	**Providing painting figuring and numbering to culverts upto 6 m** span complete as per IRC specifications.	**Each**	**319.00**
8.17	**Providing painting figuring and numbering to minor bridge up to 30 m** linear waterway complete as per IRC specifications.	**Each**	**268.00**
8.18	**Providing painting figuring and numbering to major bridge, linear waterway exceeding 30 m** complete as per IRC specifications.	**Each**	**299.00**
8.19	**Providing & Fixing Delineator** made of M.S. Hollow Rectangular Pipe (Conforming to IS: 4923) of cross section 96mmx 48mm of 1.20 meter length. The top of the hollow pipe, welded and closed with 16 gauge M.S. Sheet. The height of the Delineator above ground level should be between 0.8 meter and 1.0 meter. The bottom of the delineator should be provided with holdfast of length 15cm on each side. Delineator should be painted with coat of Zinc Chromate stoving Prime and two coats of Black Stove Enamel (Oven Baked) paint with 3nos. 15 cm bands of white Retro-reflective Sheeting of Engineering Grade pasted around the pipe and 2 Nos. High intensity Grade Retro-reflective Sheeting of size 8 cm x 10cm pasted on the top of each side of Delineator and treated With HLVA & fixing the same in M-15 grade concrete block of size 30x30x30cms including transportation etc. complete. The construction and placement of the delineator must be as per IRC: 79.	**Each.**	**1913.00**

Item No.	Descriptions	Unit	Rate (Rs.)
8.20	**Providing & Fixing Hazard Marker** Type-2 Partial Retro Reflective Size 0.30 x 0.90M made of 16 gauge (1.6 mm) thick mild steel sheet Confirming to IS:2062 Painted with one cast of Zinc Chromate Stoving Primer and two coats of Black Stove Enamel (Oven Baked) paint with 10 cm bands of yellow Retro- Reflective Sheeting of Engineering Grade pasted a per IRC:79 including one MS angle Iron post of size 50x50x5 mm of 1.65 meter long duly painted with synthetic enameled paint block including bolts and fixing the same in M-15 concrete black of size 30x30x30cm, including transportation etc. Complete.	**Each.**	**1491.00**
8.21	**Providing & Fixing; Object Marker** of size 30 cm equilateral Triangle made of 1.5 mm thick Aluminum sheet pasted with High intensity Grade Retro Reflective Sheeting duly treated with HLVA complete with post of angle size 50x50x5 mm of 0.75 m and fixing the same in M-15 concrete block of size 30x30x30cm including transportation etc. complete.	**Each.**	**924.00**
8.22	**Providing and Fixing Linear Delineator** System as per MOST clause 806 of specification for Roads and Bridges, of size 33''x 4" made with corrugate Aluminum (Confirming to IS:736 -Material Designation, 24345; or 1900) and reflective sheeting of Micro prismatic Lens sheeting as stipulated in MoRTH circular (RW/NH-33023/31/88-DO. iii) confirming to ASTM D4956-01 Type-IX and fixing the same with bracket made of galvanized steel fixed with 6 Nos. high precision Screws confirming to IS:1364.	**Each.**	**2520.00**
8.23	Providing & Fixing tree studs in Square/ Round shape of 4" side/diameter made of 2 mm aluminum substrate (Confirming to IS:736-Material Designation, 24345 or 1900) end reflective surface of High Intensity grade as specified in section 801.3 of MoRTH duly treated with HLVA and fixing the same with four Nos. high strength nails confirming to 1S:1367 on trees at site each.	**Each.**	**67.00**
8.24	**Boundary pillar** (Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25, fixed in position including finishing and lettering but excluding painting as per clause 807)	**Each.**	**417.00**
8.25	**G.I Barbed wire Fencing 1.2 meter high** (Providing and fixing 1.2 meters high GI barbed wire fencing with 1.8 m angle iron posts 40 mm x 40 mm x 6 mm placed every 3 meters center to center founded in M15 grade cement concrete, 0.6 meter 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 808)	**Meter.**	**243.00**
8.26	**G.I Barbed wire Fencing 1.8 meter high** (Providing and fixing 1.8 meters high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 meters center to center founded in M15 grade cement concrete, 0.6 meter below ground level, every 15th post, last	**Meter**	**386.00**

Item No.	Descriptions	Unit	Rate (Rs.)
	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 808)		
8.27	**Tubular Steel Railing on Medium Weight steel channel (ISMC series) 100mm x 50mm** (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 meters high above ground, 2 m centre to centre, complete as per approved drawings)	**Meter**	**1652.00**
8.28	**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 posts1.8 meters high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 meters centre to centre, complete as per approved drawing)	**Meter**	**1146.00**
8.29	**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-25 grade concrete with HYSD reinforcement conforming to IRC:21-2000 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MoRTH circular No. RW/NH-33022/1/94-DO III dated 24 June, 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified)	**Meter**	**3005.00**
8.30	**Metal Beam Crash Barrier**		
A	**Type-A, "W" : Metal Beam Crash Barrier** (Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level firmly fixed to the ground by means of foundation with M-15 grade cement concrete 30 x 30 x 110 cm, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 811.3)	**Meter**	**2555.00**
B	**Type-B, "THRIE" : Metal Beam Crash Barrier** (Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 2 m high with 1.15 m below ground level firmly fixed to the ground by means of foundation with M15 grade cement concrete 30 x 30 x 115 cm, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a space of channel section 150 x 75 x 5 mm, 546 mm long complete as per clause 811.3)	**Meter**	**4131.00**

Item No.	Descriptions	Unit	Rate (Rs.)
8.31	**Flexible Crash Barrier, Wire Rope Safety Barrier** (Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (ISMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M15 grade cement concrete 300 x 300 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M15 grade cement concrete foundation 2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 450 inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement concrete.)	**Meter**	**5557.00**
8.32	**Road Markers/Road Stud with Lens Reflector** (Providing and fixing of road stud 100x 100 mm, die cast in aluminum, resistant to corrosive effect of salt and grit, fitted with lens reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BIS:873, part-IV:1973)	**Each**	**270.00**
8.33	**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, all as per BIS: 873.	**Each**	**646.00**
8.34	**Portable Barricade in Construction Zone** (Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 45^0, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55)	**Each**	**2325.00**
8.35	**Permanent Type Barricade in Construction Zone**		
A	**With Steel Components** (Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of 45^0, complete as per IRC:SP:55)	**Each**	**3646.00**
B	**With Wooden Components** (Construction of a permanent type barricade made of wooden components, 1.5 m high from road level, fitted with 3 horizontal planks 200 mm wide and 3.66 m long on 100 x 100mm wooden vertical post, painted with yellow and white stirrups, 150 mm in width at an angle of 45^0, complete as per IRC:SP:55)	**Each**	**2119.00**
C	**With Bricks** (Construction of a permanent type barricade made with brick work in mud mortar, 1.5 m high, 4 m long, 600 mm thick, plastered with cement mortar 1:6, painted with	**Each**	**12266.00**

Item No.	Descriptions	Unit	Rate (Rs.)
	yellow and white strips)		
8.36	**Drum Delineator in Construction Zone** (Provision of metal drum, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferential strips of alternate black and white 100 mm wide fitted with reflectors 3 Nos. of 7.5 cm dia, all as per IRC:SP:55)	**Each**	**479.00**
8.37	**Providing and fixing Raised Pavement Markers** made of polycarbonate ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 Kg tested in accordance to ASTM D 4280 type H and complying to specifications of category A of MoRTH (RW/NH-33023/10/97-DO III Dtd. 11.06.1997). The pavement markers will be auto moulded by dual polymer shanks and must comply with all the MoRTH specifications. The height, width and length shall not exceed 50 mm, 100 mm and 100 mm respectively and with minimum reflective area of 13 Sq.cm. on each side and slope to the base shall be 35 +/-5 degree. The strength of detachment of the integrated cylindrical shanks (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 kgf. Fixing will be by drilling holes on road for the shanks to go inside, without nails and using epoxy resin based adhesive and complete as directed by the Engineer-in-charge.	**Each**	**440.00**
8.38	**Providing and fixing of Route Marker Sign Board** with High Intensity Grade Retro-reflective Sheeting (as per section 801.3) made of 1.5 mm thick aluminum sheet. The single vertical post made from M.S. angle 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 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing. Size of board 600 mm x 440 mm for the upper board and 300 mm x 250 mm for the lower plate as per IRC Specifications.	**Each**	**2879.00**
8.39	**Providing and fixing overhead concrete sign board** of size 1200 x 1000 mm on road side made of RCC M20 grade of 50 mm thick with 10 mm. dia. bar reinforcement @ 150 mm c/c in both directions fixed on two vertical post 150x150 mm size made of RCC M20 grade making grooves at top for fixing of boards with 4 nos. vertical bars of 10 mm dia and stirrups with 8 mm dia bars @ 150 mm c/c. The post to be embedded and fixed to a depth of 600 mm below ground level in PCC of M15 grade, block of size 500 x 500 x 700 mm and the height of post at the bottom of the sign board from crown of the road is not less than 1.5 m. All components of sign and support shall be primed and painted with two coats of synthetic enamel paint with all relevant specifications. The rates shall include cost of excavation , supply of all materials, labour, T & P, painting and figuring, carriage to site and fixing complete as directed by the Engineer-in-charge.	**Each**	**4218.00**

Item No.	Descriptions	Unit	Rate (Rs.)
8.40	**Providing and fixing concrete sign boards resting on ground** pre-cast/ cast-in-situ in PCC M20 grade with surface reinforcement of 8 mm dia bars @ 155 mm c/c over 300 mm thick PCC M-15 grade foundation concrete with 50mm offset all round as per drawing i/c cost of excavation, plastering with CM 1:3 & finishing with neat slurry cement, painting two or more coats to give an even shade and figuring as directed by Engineer-in-charge.		
(i)	**Type A : Village boards** (600 mm long, 300 mm wide at bottom & 100 mm wide at top, and height 600 mm above 500 mm thick block of size 700 x 400 x 500 mm with both faces inclined)	**Each**	**2382.00**
(ii)	**Type B : Destination boards** (700 mm long, 300 mm wide at bottom & 100 mm wide at top, and height 800 mm above 500 mm thick block of size 800 x 400 x 500 mm with one face vertical)	**Each**	**3000.00**
(iii)	**Type C : Cautionary boards** (500 x 500 x 500 mm at bottom & 500 x (500 + 100)/2 x 500 mm at top over 300 mm thick block of size 500 x 500 x 300 mm with one face vertical)	**Each**	**3223.00**
8.41	**Providing and fixing of empty maxphalt drums** on road sides, filling it with earth/moorum/boulders etc. including making holes with pick axes available within 50 m lead, white washing two coats etc complete.	**Each**	**353.00**
8.42	**Construction of boulder/stone masonry wall** 60 cm thick and 80 cm height, including white washing 3 coats on one side of the wall for temporary diversion/guard walls including all materials complete.		
	(i) In mud mortar	**Rm.**	**738.00**
	(ii) In cement mortar C.M. 1:6	**Rm.**	**1011.00**
8.43	**Construction of R.R. masonry walls** 0.45 m thick and 0.60 m height in CM 1: 3 including excavation, white washing two coats on one side of wall for guard wall/protection wall over 100 mm thick base concrete of PCC 1:3:6 etc complete.	**Rm.**	**1204.00**
8.44	**Providing and laying of a reinforced cement concrete pipe duct, 300 mm dia., across the road (new construction) ,** extending from drain to drain in cuts and toe of slopes to toe of slopes in fills, constructing head walls at both ends, providing a minimum fill of granular material over top and sides of RCC pipes as per IRC: 98-2011, bedded on a 0.3 m thick layer of granular material free of rock pieces , outer to outer distance of pipes at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts , joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC:98-2011 and approved drawings.		
(i)	Single row for one utility service	**Meter**	**553.00**
(ii)	Double row for two utility service	**Meter**	**1023.00**
(iii)	Triple row for three utility service	**Meter**	**1484.00**
8.45	**Providing and fixing Solar Blinker Light** 300 mm dia, LED Aspect made of FRP/Poly carbonate with battery backup fitted on 150 mm dia MS pipe - 3.0 meter long from the ground level, firmly fixed to the ground by mean of properly designed	**Each**	**22500.00**

Item No.	Descriptions	Unit	Rate (Rs.)
	foundation with M-15 grade cement concrete 60cm x 60cm x 60cm, below ground level.		
8.46	**Providing and fixing of Solar Raised Pavement Markers** made of polycarbonate molded body with circular shape, solar powered, LED self illumination in active mode, 360 degree illumination and reflective panels with micro-prismatic lens capable of providing total internal reflection of the light entering the lens face in passive mode. The marker shall support a load of 20000 kg tested in accordance to ASTM D 4280. The marker should be resistant to dust and water ingress according to IP 65 standards and should withstand temperatures in the range of 0ºC to 70ºC. Color of lighting could be provided in red or yellow (amber) as per requirement and typical frequency of blinking is 1Hz. There should be current losses of less than 20 micro-amperes at 2.4 V in sleep-charging mode to enhance the life of the marker and a full charge should provide for a minimum autonomy of 50 hours. The height, width and length of the marker shall not be less than 10 mm x 100 mm x 100 mm. Also, the surface diameter of the marker shall not be less than 100 mm respectively. The weight of the marker shall not exceed 0.5 Kilograms. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.	**Each**	**3500.00**
8.47	**The Median Marker** shall be made of tough, high impact resistant, injection-molded, thermoplastic body with an isosceles trapezoidal structure of length, width and height not less than 15cm, 10cm and 10cm respectively and thickness not less than 1.8mm. The logo of the manufacturer shall be embossed on either side of the body. The Median Marker shall have fluorescent yellow color retro-reflective sheeting, with fully reflective micro prismatic cube corners as its retro-reflective elements and meets IRC:67 type XI specifications, of size not less than 3.5"x 3.5" on both sides of the body. The edges of this retro-reflective sheeting shall be protected in such a way that they are not exposed. Median Marker shall be fixed by a combination of epoxy adhesive and grouting.	**Each**	**750.00**

CHAPTER- 9
PIPE CULVERTS

Item No.	Descriptions	Unit	Rate (Rs.)
9.1	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)		
	Ordinary soil		
	Up to 3 m depth	**Cum.**	**371.00**
9.2	**Providing and laying Reinforced Cement Concrete pipe NP 4 / prestrssed concrete pipe on first class bedding** (Laying Reinforced cement concrete pipe NP4/prestressed concrete pipe for culverts on first class bedding of granular material including fixing collar with cement mortar 1:2 and bedding aas per clause 2904 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)		
A	600 mm dia	**Meter**	**7047.00**
B	900 mm dia	**Meter**	**8257.00**
C	1000 mm dia	**Meter**	**9467.00**
D	1200 mm dia	**Meter**	**10807.00**
9.3	**Providing and laying Reinforced Cement Concrete pipe NP 4 / prestressed concrete pipe** (Laying Reinforced cement concrete pipe NP4 /prestressed concrete pipe for culverts including fixing collar with cement mortar 1:2 **but excluding bedding below pipe** , excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)		
A	600 mm dia	**Meter**	**6824.00**
B	900 mm dia	**Meter**	**8034.00**
C	1000 mm dia	**Meter**	**9244.00**
D	1200 mm dia	**Meter**	**10564.00**
9.4	**Providing 1st class bedding below pipes with graded sand or other granular materials passing through 5.6 mm sieve as per clause 2904.**	**Cum.**	**1161.00**
9.5	**Stone masonry work in cement mortar 1:3 for head wall** complete as per drawing and Technical Specifications section 1400 and 2200		
(i)	Random Rubble Masonry (coursed or uncoursed)	**Cum.**	**4540.00**
(ii)	Coursed rubble masonry (first sort)	**Cum.**	**4816.00**
(iii)	Ashlar masonry (first sort)	**Cum.**	**5967.00**
9.6	**Pointing with cement mortar (1:3) on stone masonry head walls** as per Technical specifications section 1300 and 2200	**Sqm.**	**50.00**

Item No.	Descriptions	Unit	Rate (Rs.)
9.7	**Plain cement concrete** complete as per drawing and Technical Specifications		
	PCC Grade M 15	**Cum.**	**4549.00**
	PCC Grade M 20	**Cum.**	**5088.00**
9.8	**Providing and laying boulders apron on river bed** for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification as per clause 2503.	**Cum.**	**1639.00**
9.9	**Providing and laying Pitching Stone/Boulder on** slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications as per clause 2504.	**Cum.**	**1639.00**
9.10	**Providing and laying Filter material underneath pitching in slopes** complete as per drawing and Technical specification including trimming of slopes to proper profile and preparation of bed and as per clause 2504.	**Cum.**	**1189.00**

CHAPTER- 10
MAINTENANCE OF ROADS

Item No.	Descriptions	Unit	Rate (Rs.)
10.1	**Restoration of Rain Cuts** (Restoration of rain cuts with soil, moorum, gravel or a mixture of these, clearing the loose soil, benching for 300 mm width, laying fresh material in layers not exceeding 250 mm and compacting with plate compactor or power rammers to restore the original alignment, levels and slopes)	**Cum.**	**229.00**
10.2	**Filling Pot-holes and Patch Repairs with Open-Graded Premix Surfacing, 20mm.** (Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 510, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2 i/c tack coat.)	**Sqm.**	**133.00**
10.3	**Filling Pot-holes and Patch Repairs with Close Graded Premix Surfacing / Mixed Seal Surfacing, 20mm.** (Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot-holes with hot bituminous material as per clause 512, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2 i/c tack coat.)	**Sqm.**	**152.00**
10.4	**Crack Filling** (Filling of crack using slow-curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.)	**Meter**	**4.40**
10.5	**Dusting** (Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.)	**Sqm.**	**1.50**
10.6	**Repair of joint Grooves with Epoxy Mortar** Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete)	**Meter**	**383.00**
10.7	**Repair of old Joints Sealant** (Removal of existing sealant and re-sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material)	**Meter**	**38.00**
10.8	**Hill Side Drain Clearance** (Removal of earth from the choked hill side drain and disposing it on the valley side manually)	**Meter**	**49.00**
10.9	**Land Slide Clearance in soil** (Clearance of land slides in soil and ordinary rock by all machines and labours required and disposal of the same on the valley side)	**Cum.**	**68.00**
10.10	**Land slide Clearance in Hard Rock Requiring Blasting** (Clearing of land slide in hard rock requiring blasting for 50% of the boulders and disposal of the same on the valley side.)	**Cum.**	**144.00**
10.11	**Detailed survey of existing road** including chaining, leveling, with cross section at 25.0 m intervals and closing survey each day's work, fixing bench marks, painting, taking trial pits and submission of road cross sections, L-sections, quantity statements and details of all cross drainage works in computerized prints in five copies in proper files and all type of compliance required by the Engineer-in-charge.	**Km.**	**14175.00**

CHAPTER- 11
HORTICULTURE

Item No.	Descriptions	Unit	Rate (Rs.)
11.1	**Maintenance of Lawns or Turfing of Slopes** (Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc.)	**Sqm**	**188.00**
11.2 (a)	**Planting Permanent Hedges including Digging of Trenches** (Planting permanent hedges including digging of trenches, 60 cm wide and 45 cm deep, refilling the excavated earth mixed with farmyard manure, supplied at the rate of 4.65 cum per 100 meters and supplying and planting hedge plants at 30 cm apart.)	**Meter**	**191.00**
(b)	**Maintenance of Hedge for one year**	**Meter**	**214.00**
11.3	**Planting and Maintaining of Flowering Plants and Shrubs**		
(a)	Planting flowering plants and shrubs in central verge i/c digging trenches, filling earth & farm manure.	**Km**	**51946.00**
(b)	Maintenance of flowering plants and shrubs in central verge for one year	**Km**	**196400.00**
11.4	**Planting of Trees and their Maintenance for one Year** (Planting of trees by the road side (Avenue trees) in 0.60 m dia. holes, 1 m. deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year)	**Each**	**1169.00**
11.5	**Half Brick Circular Tree Guard, in 2nd class Brick, internal diameter 1.25 meters, and height 1.2 meters, above ground and 0.20 meter below ground** (Half brick circular tree guard, in 2nd class brick, internal diameter 1.25 meters, and height 1.2 meters, above ground and 0.20 meter below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement : 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete)	**Each**	**1886.00**
11.6	**Edging with 2nd class Bricks, laid dry lengthwise** (Edging with 2nd class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 meters.)	**Meter**	**41.00**
11.7	**Making Tree Guard 53 cm dia. and 1.3 m high as per design from empty bitumen drum** (Making tree guard 53 cm dia. and 1.3 m high as per design from empty bitumen drum, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing 2 nos. MS sheet rings 50 x 0.5 mm with rivets, complete in all respect)	**Each**	**448.00**
11.8	**Making Tree Guard 53 cm dia. and 2 meters high as per design from empty bitumen drums** (Making tree guard 53 cm dia and 2 meters high as per design from empty bitumen drums, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing four legs 40 cm long of 30 x 3 mm MS riveted to tree	**Each**	**874.00**

Item No.	Descriptions	Unit	Rate (Rs.)
	guard and providing and fixing 2 nos. MS sheet rings 50 x 0.5 mm with rivets complete in all respects.)		
11.9	**Tree Guard with MS Angle Iron and Steel Wire** (Providing and fixing tree guard 0.60 meter square, 2.00 meter high fabricated with MS angle iron 30 x 30 x 3 mm, MS iron 25 x 3 mm at 100mm centre to centre and steel wire 3 mm dia. welded and fabricated as per design in two halves bolted together, fixed in ground with P.C.C M-10 of dimensions 150x150x200mm.)	**each tree guard**	**3315.00**

CHAPTER- 12
ARBORICULTURE AND ROAD BEAUTIFICATION

Item No.	Descriptions	Unit	Rate (Rs.)
12.1	**Manufacturing, supply & fixing of precast RCC collar** of size 50 cm. inner dia. and 50 cm. height, 7.50 cm. thickness with & gauge 4 mm thick MS wire casted with M-20 concrete of approved design, i/c transportation, labour & all material complete.	**Each**	**1305.00**
12.2	**Manufacturing, supply & fixing of precast RCC jaali for tree guard** of size 75 cm. width and 120 cm. height, 5.0 cm. thickness with & gauge 4 mm thick MS wire casted with M-20 concrete of approved design, i/c cost of all material complete.	One RCC jaali tree guard	**2979.00**
12.3	**Fabricating, supply & fixing of MS circular tree guard of 75 cm.** dia. and 120 cm. height (above GL), MS tree guard made with 3 no. 25 x 25 x 5 mm MS angle iron 150 cm. long fixed vertically and 3 nos. 20 x 5 mm MS flat fixed circumferentially around MS angle, with support of MS angle and flat 13 gauge MS wire mesh welded in square grid pattern with an opening of 2" x 2". This item includes finished by filling putty and applying primer coat of zinc chromate including cost of all materials & labour complete including fixing in ground with P.C.C M-10 of dimensions 150x150x200mm).	**Each**	**3660.00**
12.4	**Providing and fixing of 600 mm dia. clear opening Granite finish** U.V. stabilized abrasion resistance top layer composite rein manhole cover with frame reinforcement with high performance glass fibre load designation EHD-40 (40 Ton load capacity) confirming to testing procedure as per IS:1726. Deflection at full load should not be more than 12mm.	**Each**	**20095.00**
12.5	**Manufacturing, supply & fixing of precast kerb stone of size** 400mmx259mmx200mm thick made of M-20 concrete rectangular in shape with one corner chamfered by 100 mm x 100 mm as approved design i/c cost of all material, labour and curing etc. complete.	**Each**	**259.00**
12.6	**Providing and planting of 3'0" to 4'0" heighted wasingtonia**, filipheria/bismarkia novelist plam plants with 1'6" x 1'6" depth pit formation and soil preparation, (Mixing organic manure and plant's protection insecticide). Up to 4 month maintenance.	**Each**	**935.00**
12.7	**Providing and planting of 4'0" to 5'0" heighted Ficus** prestige/Blackiana plants with 1'6" x 1'6" depth pit formation and soil preparation, (Mixing organic manure and plant's protection insecticide). Up to 4 month maintenance.	**Each**	**660.00**
12.8	Providing and planting of Bogenbelia dwarf, chandni dwarf, kaner dwarf vr flower bearing plants with 0'9" x 0'9" depth pit formation and soil preparation work's, (Mixing organic manure and plant's protection insecticide). Up to 4 month maintenance.	**Each**	**88.00**

Item No.	Descriptions	Unit	Rate (Rs.)
12.9	**Providing and planting of dwarf red Ekalyha plants showing mass** effect view with 0'9" x 0'9"x1'0" depth pit formation and soil preparation work's, (Mixing organic manure and plant's protection insecticide). Up to 4 month maintenance.	**Each**	**72.00**
12.10	**Providing and planting of plumeria (Champa) 2'0" to 3'0" heighted** plants with 1'0" x 1'0"x1'6" depth pit formation and soil preparation work's, (Mixing organic manure and plant's protection insecticide). Up to 4 month maintenance.	**Each**	**380.00**
12.11	**Providing and planting of Golden durenta multi branches plants for** showing mass effect in 0'6" x 0'6" distance with soil preparation work's, (Mixing organic manure and plant's protection insecticide). Up to 4 month maintenance.	**Each**	**182.00**
12.12	**Providing and planting maxican carpet grass in mount with soil** preparation (with organic manure and plants protection insecticide) and escaping works. Up to 4 month maintenance.	**Sqm.**	**44.00**
12.13	**Human and other sculptures**		
	(a) 5 to 7 feet	**Each**	**75000.00**
	(b) 2 to 5 feet	**Each**	**30000.00**
12.14	**Cement art Mural work**	**Sqm.**	**3500.00**

BRIDGE WORKS

GENERAL NOTES
BRIDGE WORKS

1)	**DEFINITIONS**	
a)	Major Bridge :	Having a total length of above 60M. measured along the centre line of the bridge between inner face of the dirt walls.
b)	Minor Bridge :	Having a total length more 6 M. and upto 60M. measured along the centre line of the bridge between inner face of the dirt walls.
c)	Culverts :	Having a total length 6 M. or less between the inner face of the dirt walls or extreme vents way boundaries measured at right angle thereof.
2)	**SPECIFICATIONS**	
i)	The specifications of works shall be carried out as per 5th revision of "Specifications for Road and Bridge work's" (Ministry of Road Transport & Highway) - subject to such changes as are incorporated in the description of the items and notes below. The work will be governed by the design considerations and specifications contained in IRC codes of practice for Road/Bridges issued upto the date of receipt of tender.	
ii)	The materials for construction shall be governed as per relevant IS Codes.	
iii)	In the matters of interpretation in respect of any provision contained in the documents referred in para (i) & (ii) herein above the decision of the Chief Engineer, NH Zone, PWD shall be final & binding.	
3)	**FOUNDATION**	
i)	All works below average ground level or lowest water level, whichever is higher shall be termed as foundation work.	
ii)	Lowest water level shall be the average water level met with at the time of doing the foundation work. The maximum and minimum water levels shall be recorded by the Assistant Engineer, just before starting the particular foundation and within a reasonable time at the closer of that foundation work, the average of these two levels shall be the low water level for that foundation work. In case of major bridges such records will be taken by the Executive Engineer.	
4)	**SUB-STRUCTURE**:	
	The part of the bridge structure below: (a) Soffit level of the deck slab/beams and or (b) Springing level for arch spans, but above average ground level or LWL whichever is higher, shall be termed as sub-structure of the bridge part.	
5)	**SUPER-STRUCTURE**	
	The work above: (a) Soffit level for deck slabs/beams and (b) Springing level for arch span, including kerbs, railing, expansion joints, beams, slabs etc. shall be termed as super-structure of the bridge part.	

6)	**<u>CONCRETE</u>**
a)	The mixing of the concrete, transportation, placing & compaction shall be carried out as per provision made in clause 1708 and 1709 of the specifications of Road and Bridge Works of MoRTH (5th Revision).
b)	Equipment used for production , transportation and compaction of concrete shall be as per provision made in clause 1707 of specifications for Road and Bridge works of MoRTH (5th Revision).
c)	The rates of both ordinary and controlled concrete of any mix are included the cost of preparing and testing concrete cubes as per specifications laid down.
d)	All concrete shall be required compaction to produce dense and homogeneous mass by means of vibrators unless otherwise permitted by the Engineer-in-Charge for exceptional cases, such as concreting under water where use of vibrator is prohibited.
e)	Concrete poured under water shall be required to provide extra cement @10% as per provision made in "Specifications for Roads & Bridges works" of MoRTH (5th Rev).
f)	Finishing of concrete by plastering the surface shall not be done without obtaining written permission from the Executive Engineer. No extra for plastering shall be payable. Light touching up and rubbing the uneven surfaces by carborandum stone/Grinding shall be carried out as part of finishing of concrete surface.
g)	The grading, size, quality of coarse aggregates shall be followed strictly as per the specifications for Road and Bridge works" of MoRTH (5th Revision) and respective IRC Codes.
h)	The size and quality of aggregate, mixing etc. for plain concrete or RCC works should be as given in "Specification for Road and Bridge works" of MoRTH (5th Revision).
i)	The rates of concreting items include the cost of form work and centering.
j)	Admixtures may be used for the concrete work to improve the workability with minimum water cement ratio and shall be provided as per provision made in clause 1705 of "Specification for Road and Bridge works" of MoRTH (5th Revision).
7)	**<u>STEEL</u>**
i)	HSD (High Strength Deformed Steel bars) conforming to IS:1786-2008 shall be used as reinforcement. Such steel reinforcement bars shall be obtained from the rolling mills having integrated steel manufacturing plant and licensed from BIS to manufacture steel for reinforcement. Re-rolled steel shall not be incorporated in the work. The contractor shall have to produce test certificate in the proforma prescribed/approved by BIS from the manufacturer for every batch of steel brought to the site of work. Test Certificate shall be produced prior to its use and kept at site.
ii)	The contractor shall be responsible for ensuring the quality of steel and shall conduct all tests at his own cost to ensure quality as per provision in the specifications and directions of the Engineer-in-Charge. The theoretical consumption of steel shall be worked out at regular interval and shall be verified with actual steel brought to the site.

iii)	Steel used as reinforcement and other structural steel or HT steel shall be measured as per the actual quantity of steel placed in finished structures as per clause 1608 of "Specification for Road and Bridge works" of MoRTH (5th Revision).
8)	**CEMENT**
i)	The contractor shall be responsible for ensuring the quality of cement and shall conduct all tests at his own cost to ensure quality as per provision in the specifications and directions of the Engineer-in-Charge. The theoretical consumption of cement shall be worked out at regular interval and shall be verified with actual cement brought to the site.
9)	**MASONRY WORK**
i)	All the stone masonry work shall be strictly as per detailed specifications given in "Specification for Road and Bridge works" of MoRTH (5th Revision).
ii)	In case stone headers are not available, precast headers of M-15 concrete shall be used.
iii)	Generally for all stone masonry subjected to exposure of water flow (e.g. piers, abutments, returns etc.) CR Masonry first sort shall be used unless otherwise provided in the approved drawing.
iv)	In case where width of stone masonry is more than one meter, the central portion of stone masonry (Hearting) shall be done with un-coursed random rubble masonry. Payment for the CR Masonry will be limited to 1/2 meter width on either faces and the balance will be paid as un-coursed Random Rubble Masonry.
10)	**LEAD AND LIFTS**
	The rates in all items of this SOR are inclusive of all lead, lifts and transportation of material. No extra on this account shall be payable unless otherwise specifically mentioned in any particular item.
11)	**ROYALTY AND OTHER TAXES**
	The rates are inclusive of the element of hire and running charges of all types of plant, machinery and equipment required to complete the work, unless specified otherwise. Royalty, octroi-duty, but commercial and all other taxes are included in the rates except GST. GST charges are not included in the rates.
	The rates are exclusive of GST charges. GST shall be as per prevailing laws of GOI. However GST shall be added @ 12% over estimated cost for the purpose of realistic cost of project. GST shall not be payable to the Contractor. Contractor has to include GST in his quotation.
12)	**DISMANTLING**
	The rates include the complete cost of dismantling and shifting away the dismantled material to place at site of work as directed by Engineer-in-Charge and also the rates include the serviceable dismantled material to be properly stacked at river bank at a location directed by the Engineer-in-Charge.

13)	**<u>STORAGE OF MATERIALS</u>:** Storage of construction materials at site shall be as per clause 1014 & 1604 of "Specification for Road and Bridge works" of MoRTH (5th Revision).
14)	**<u>MODE OF MEASUREMENTS</u>:** The mode of measurements shall be as per provisions contained in the relevant clauses of the specifications unless specified otherwise.
15)	The rate includes the element of hire & operational charges of all types of plants, machinery and equipment required to complete the work unless specified otherwise.
16)	Rates include provisions of necessary precautionary devices and other arrangements etc. for traffic control, e.g. provision of caution boards, red lights, watchmen flags and flagmen, but do not include construction of temporary diversion.
17)	The rates do not include the work of trial pits, which are to be measured and paid separately.
18)	The contractor shall install test laboratory at the site of work to conduct all specified field tests as per provision in the specifications and direction of Engineer-in-Charge in the presence of department supervisory staff and the specified tests of materials would be conducted in the presence of department's supervisory staff.
19)	Detailed measurements for steel and concrete for items of RCC approach slab, RCC railing and RCC wearing coat shall also be recorded in Measurement Book. However the payment shall be regulated as per the item and rates given in the SOR.
20)	The measurements of excavation of rock shall be as per clause specified in the "Specification for Road and Bridge works" of MoRTH (5th Revision). All serviceable excavated rock shall be issued to the contractor at the rate of Rs. 500/- per cum.
21)	The basic rates for important materials considered in this SOR are as follows :- (a) Cement :- Rs. 5740.00 per M.T. (b) Steel (HYSD bar) :- Rs. 59400.00 per M.T. (c) Structural Steel :- Rs. 54750.00 per M.T. (d) High Tensile Steel wires/strands :- Rs. 84000.00 per M.T.

CHAPTER WISE NOTES
CHAPTER –13
FOUNDATION

1. The excavation shall be paid as per the area of foundation concrete block, multiplied by the depth below average ground level at the location of foundation. The rates are inclusive of the extra quantity of excavation required for providing the excavation in steps or slope as per direction of Engineer-in-Charge.
2. (i) The rates of dewatering in a foundation are inclusive of coffer damming or diversion of water course required to facilitate the bailing out of water in the particular foundation pit inclusive of all required machinery such as pumps, compressors etc. including their hire and running charges, pay of staff and P.O.L. etc. complete in all respects.

   (ii) The volume of dewatering payable shall be measured by multiplying the area of foundation block of the particular foundation with the height of average water level met with during the excavation of the particular foundation. The average water level shall be the average of water level met in excavation pit during excavation or water level in channel whichever is lower and the same observed on completion of excavation. The payment of this item shall be made only after the foundation structure is completed above water level or G.L. whichever is higher. The rate of this item shall not be reduced, if coffer-damming or diversion of water course is not done and dewatering is carried out by deploying pumps and/or manually.
3. Excavated hard rock shall be stacked at suitable places at the bank as directed by Engineer-in-Charge. No extra shall be payable on account of lift, lead, transportation and stacking of excavated hard rock.
4. Back filling up to original bed level shall be done as per clause 304.3.7 of "Specification for Road and Bridge works" of MoRTH (5^{th} Revision). No extra shall be payable on this account.
5. The concrete mix used in bottom plug of wells shall have a minimum cement content of 330 kg/cum. & a slump of about 150 mm. the concrete shall be placed by tremie under still water condition & cement content of mix shall be increased by 10%.
6. A leveling course of 150mm thickness (Av.) in M-15 concrete shall be provided before laying open foundations.
7. The rates of well sinking include the charges of labour, plant, cost of P.O.L. and other materials and accessories. The rates also include the cost of diversion of channel, making of island, if required to be done for laying the cutting edge, curb and steining. The permissible tilt and shift in well in its final position shall be as per IRC:78. The rates include the cost of rectification of tilt and shift in excess of permissible limit. No extra over these rates are payable for sinking of well.
8. For the purpose of the computation of the volume in well sinking, the cubic content of well shall be measured by the portion contained in outer diameter of well steining. Projection of RCC curb, if any shall not be measured.
9. The rates of concreting are inclusive of cost of formwork, staging etc. complete.

CHAPTER –14
SUB-STRUCTURE

1.	The rates of bearing are inclusive of testing charges, procurement, transport.
2.	The use of AC pipe for weep holes shall be permitted only in PCC/RCC/Brick masonry sub-structure. In stone masonry in-built weep holes of size 80mm x 150mm shall be constructed and no extra for this work is payable. No deduction for the recess or for pipes due to weep holes shall be made in the measurement of stone/brick masonry/PCC/RCC.
3.	The rates of concreting are inclusive of the cost of form work and staging.
4.	The bearings should be procured only from those manufactures, who have not been disqualified by the MoRTH. Only finished weight of bearings as brought to the site and fixed in position shall be taken into account for measurement.
5.	Use of plate compactor is mandatory for compaction of back fill behind the abutment and returns and filter media shall be provided as per provision in clause 2504 and table No. 300-3 of "Specification for Road and Bridge works" of MoRTH (5^{th} Revision).

CHAPTER –15
SUPER-STRUCTURE

1.	The rates of concreting inclusive of the cost of form work, centering staging etc. complete.
2.	For super-structure only steel form work will be accepted. The thickness of steel plate shall not be less than 3 mm. The form work shall be adequately stiffened by brackets and angles not more than 15 cm. apart in such a manner that it shall be free from distortion during handling and vibration of concrete.
3.	Centering made up of steel trusses below soffit shall not be supported in recess made in sub-structure. The contractor may provide steel trusses supported on suitably designed brackets, anchored to the pier/pier-cap. Providing safe centering shall be sole responsibility of the contractor. The contractor shall remove all bolts, anchors protruding beyond the pier/pier-cap after removal of centering.
4.	Contractor shall have the option to adopt launching of super-structure, but in such cases contractor shall get prior permission of the department and get approval of launching scheme from Superintending Engineer.
5.	The rates of pre-stressing of H.T. steel are inclusive of the hire and running expenses of plant and machineries, labour involved in stressing operations, anchorages and ducts or sheathing etc., complete including grouting.
6.	Strip seal type of expansion joints shall be obtained from prequalified suppliers of the MoRTH and the firm will have to give warranty of 10 years of trouble free performance.

CHAPTER- 13
FOUNDATIONS

Item No.	Descriptions	Unit	Rate (Rs.)
13.1	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)		
I	**Ordinary soil**		
A	**By Manual means**		
(i)	Upto 3 m depth	**cum**	**166.00**
(ii)	3 m to 6 m depth	**cum**	**190.00**
(iii)	Above 6 m depth	**cum**	**239.00**
	Add extra 20% in the rates of above items for dewatering (Assessment of dewatering shall be made as per site condition)		
	The cost of shoring and shuttering, where needed, be added @ 1 percent on cost of excavation for open foundation.		
II	**Ordinary rock (not requiring blasting)**		
	Upto 3 m depth)		
A	**By Manual means**	**cum**	**273.00**
	Add extra 20% in the rates of above items for dewatering (Assessment of dewatering shall be made as per site condition)		
III	**Hard rock (requiring blasting)**	**cum**	**938.00**
	Add extra 20% in the rates of above items for dewatering (Assessment of dewatering shall be made as per site condition)		
IV	**Hard rock (blasting prohibited)**	**cum**	**997.00**
	Add extra 20% in the rates of above items for dewatering (Assessment of dewatering shall be made as per site condition)		
V	**Marshy soil**		
A	**By Manual means**		
	upto 3 m depth	**cum**	**733.00**
	Add extra 30% in the rates of above items for dewatering (Assessment of dewatering shall be made as per site condition)		
	Add extra for shoring and shuttering where needed.		
VI	**Back Filling in Marshy Foundation Pits**	**cum**	**400.00**
13.2	**Filling Annular Space Around Footing in Rock** (Lean cement concrete 1:3:6 nominal mix.	**cum**	**4866.00**
13.3	**Sand Filling in Foundation Trenches** as per Drawing & Technical Specification	**cum**	**975.00**

Item No.	Descriptions	Unit	Rate (Rs.)
13.4	**Brick masonry work** in cement mortar 1:3 in foundation complete excluding pointing and plastering, as per drawing and technical specifications	**cum**	**5894.00**
13.5	**Stone masonry** work in cement mortar 1:3 in foundation complete as drawing and Technical Specifications and as per clauses of section 1500,1700 and 2100.		
(i)	Square Rubble Coursed rubble masonry (first sort)	**cum**	**4566.00**
(ii)	Random Rubble Masonry Coursed / uncoursed	**cum**	**4620.00**
13.6	**Plain/Reinforced cement concrete in open foundation** complete as per drawing and technical specifications		
A	**Using concrete mixer**		
(i)	PCC Grade M15	**cum**	**4866.00**
(ii)	PCC Grade M20	**cum**	**5445.00**
(iii)	PCC Grade M25	**cum**	**6143.00**
(iv)	PCC Grade M30	**cum**	**6179.00**
(v)	RCC Grade M20	**cum**	**5474.00**
(vi)	RCC Grade M25	**cum**	**6179.00**
(vii)	RCC Grade M30	**cum**	**6193.00**
(viii)	RCC Grade M35	**cum**	**6293.00**
B	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	PCC Grade M20	**cum**	**5262.00**
(ii)	PCC Grade M25	**cum**	**5970.00**
(iii)	PCC Grade M30	**cum**	**6002.00**
(iv)	RCC Grade M20	**cum**	**5297.00**
(v)	RCC Grade M25	**cum**	**6003.00**
(vi)	RCC Grade M30	**cum**	**6018.00**
(vii)	RCC Grade M35	**cum**	**6119.00**
13.7	**Well Foundation** (Providing and constructing temporary island for construction of well foundation for 8m dia. Well.)		
(i)	Depth of water 1.0 m and height of island to be 1.25m.	**each**	**74070.00**
(ii)	Depth of water 4.0 m and height of island 4.5 m.	**each**	**510878.00**
(iii)	Providing and constructing one span service road to reach island location from one pier location to another pier location	**meter**	**3058.00**
13.8	**Providing and laying cutting edge of mild steel** weighing 40 kg per meter for well foundation complete as per drawing and technical specifications per relevant clause of section 1200 and 1900.	**MT**	**104415.00**
13.9	**Plain/Reinforced cement concrete, in well foundation** complete as per drawing and technical specification as per clauses of section 1200,1500 and 1700.		
A	**Well curb**		
(a)	**Using concrete mixer**		

Item No.	Descriptions	Unit	Rate (Rs.)
(i)	RCC Grade M25	cum	7147.00
(ii)	RCC Grade M35	cum	7332.00
(b)	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	RCC Grade M25	cum	6944.00
(ii)	RCC Grade M35	cum	7130.00
B	**Well steining**		
(a)	**Using concrete mixer**		
(i)	PCC Grade M15	cum	5147.00
(ii)	PCC Grade M20	cum	5760.00
(iii)	PCC Grade M25	cum	6514.00
(iv)	PCC Grade M30	cum	6601.00
(v)	RCC Grade M20	cum	5791.00
(vi)	RCC Grade M25	cum	6551.00
(vii)	RCC Grade M30	cum	6582.00
(b)	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	PCC Grade M25	cum	6331.00
(ii)	PCC Grade M30	cum	6412.00
(iii)	RCC Grade M20	cum	5603.00
(iv)	RCC Grade M25	cum	6366.00
(v)	RCC Grade M30	cum	6398.00
C	**Bottom Plug**		
(a)	**Using concrete mixer**		
(i)	PCC Grade M20	cum	5922.00
(ii)	PCC Grade M25	cum	6434.00
(iii)	PCC Grade M30	cum	6486.00
(b)	**Using Batching Plant, Transit Mixer and Crane/concrete pump**		
(i)	PCC Grade M20	cum	5731.00
(ii)	PCC Grade M25	cum	6240.00
(iii)	PCC Grade M30	cum	6295.00
D	**Intermediate plug**		
(a)	**Using concrete mixer**		
(i)	PCC Grade M20	cum	5916.00
(ii)	PCC Grade M25	cum	6158.00
(b)	**Using Batching Plant, Transit Mixer and Crane/concrete pump**		
(i)	PCC Grade M20	cum	5745.00
(ii)	PCC Grade M25	cum	5984.00
E	**Top plug**		
(a)	**Using Concrete Mixer**		
(i)	PCC Grade M15	cum	4679.00
(ii)	PCC Grade M20	cum	5236.00
(iii)	PCC Grade M25	cum	5922.00
(b)	**Using Batching Plant, Transit Mixer and Crane/concrete pump**		

Item No.	Descriptions	Unit	Rate (Rs.)
(i)	PCC Grade M25	**cum**	**5755.00**
F	**Well cap**		
(a)	**Using concrete Mixer**		
(i)	RCC Grade M25	**cum**	**6179.00**
(ii)	RCC Grade M30	**cum**	**6193.00**
(iii)	RCC Grade M35	**cum**	**6293.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	RCC Grade M25	**cum**	**6004.00**
(ii)	RCC Grade M30	**cum**	**6018.00**
(iii)	RCC Grade M35	**cum**	**6119.00**
(iv)	RCC Grade M40	**cum**	**6230.00**
13.10	**Sinking of 6 m external diameter well** (other than pneumatic method of sinking) through all types of soil and rock complete as per drawing and technical specifications as per section 1200 in (the rate include removal of all type of obstructions).		
A	**Sandy / Clayey Soil**		
(i)	**Depth below bed level upto 3.0 M**	**cum**	**478.00**
(ii)	**Beyond 3m upto 10m depth**	**cum**	**941.00**
(iii)	**Beyond 10 m upto 20 m**		
	Notes		
a)	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
(iv)	**Beyond 20m upto 30 m**		
a)	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
B	**Soft rock (6m dia well)**	**Cum**	**1147.00**
C	**Hard rock (6m dia well)**	**Cum**	**1256.00**
13.11	**Sinking of 7 m external diameter well** (other than pneumatic method of sinking) through all types of soil and rock complete as per drawing and technical specifications as per section 1200 in (the rate include removal of all type of obstructions).		
A	**Sandy / Clayey Soil**		
(i)	**Depth below bed level upto 3.0 M**	**Cum**	**510.00**
(ii)	**Beyond 3m upto 10m depth**	**Cum**	**692.00**
(iii)	**Beyond 10 m upto 20 m**		
	Notes		
a)	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
(iv)	**Beyond 20m upto 30 m**		
a)	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
B	**Soft rock (7m dia well)**	**Cum**	**766.00**
C	**Hard rock (7m dia well)**	**Cum**	**1059.00**

Item No.	Descriptions	Unit	Rate (Rs.)
13.12	**Sinking of 8 m external diameter well** (other than pneumatic method of sinking) through all types of soil and rock complete as per drawing and technical specifications as per section 1200 in (the rate include removal of all type of obstructions).		
A	**Sandy / Clayey Soil**		
(i)	**Depth upto 3.0 M**	**Cum**	**477.00**
(ii)	**Beyond 3m upto 10m depth**	**Cum**	**545.00**
(iii)	**Beyond 10 m upto 20 m**		
	Notes		
a)	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
(iv)	**Beyond 20m upto 30 m**		
a)	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
B	**Soft rock (8m dia well)**	**Cum**	**652.00**
C	**Hard rock (8m dia well)**	**Cum**	**828.00**
13.13	**Sinking of 9 m external diameter well** (other than pneumatic method of sinking) through all types of soil and rock complete as per drawing and technical specifications as per section 1200 in (the rate include removal of all type of obstructions).		
A	**Sandy / Clayey Soil**		
(i)	**Depth below bed level upto 3.0 M**	**Cum**	**397.00**
(ii)	**Beyond 3m upto 10m depth**	**Cum**	**465.00**
(iii)	**Beyond 10 m upto 20 m**		
	Notes		
a)	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
(iv)	**Beyond 20m upto 30 m**		
a)	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
B	**Soft rock (9m dia well)**	**Cum**	**633.00**
C	**Hard rock (9m dia well)**	**Cum**	**755.00**
13.14	**Sinking of 10 m external diameter well** (other than pneumatic method of sinking) through all types of soil and rock complete as per drawing and technical specifications as per section 1200 in (the rate include removal of all type of obstructions).		
A	**Clayey soil (10m dia. Well)**		
(i)	**Depth below bed level upto 3.0 M**	**Cum**	**347.00**
(ii)	**Beyond 3m upto 10m depth**	**Cum**	**363.00**
(iii)	**Beyond 10 m upto 20 m**		
	Notes		
A	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
B	**Add for dewatering @ 5% of cost, if required.**		
(iv)	**Beyond 20m upto 30 m**		

Item No.	Descriptions	Unit	Rate (Rs.)
A	Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter		
B	**Soft rock (10m dia well)**	**Cum**	**559.00**
C	**Hard rock (10m dia well)**	**Cum**	**694.00**
13.15	**Sand filling in wells** complete as per drawing and technical specifications as per section 1207.	**cum**	**975.00**
13.16	**Providing steel liner** 10 mm thick for curbs and 6mm thick for steining of wells including fabricating and setting out as per detailed drawing and specifications as per section 1200 and 1900.	**MT**	**94130.00**
13.17	**Bored cast-in-situ M35 grade R.C.C. pile** excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m as per section 1100 and 1700.		
(i)	Pile diameter-750 mm	**meter**	**8202.00**
(ii)	Pile diameter-1000 mm	**meter**	**13245.00**
(iii)	Pile diameter-1200 mm	**meter**	**16493.00**
13.18	**Driven cast-in-place vertical M35 grade R.C.C. pile** excluding reinforcement complete as per drawing and & Technical Specification as per section 1100 and 1700.		
(i)	Pile diameter-750 mm	**meter**	**5688.00**
(ii)	Pile diameter-1000 mm	**meter**	**8856.00**
(iii)	Pile diameter-1200 mm	**meter**	**12984.00**
13.19	**Driven precast vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification as per section 1100 and 1700.		
(i)	Pile diameter-500 mm	**meter**	**2863.00**
(ii)	Pile diameter-750 mm	**meter**	**4438.00**
(iii)	Pile diameter-1000 mm	**meter**	**7091.00**
13.20	**Driven precast vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification as per section 1100 and 1700.		
(i)	Size of pile - 300 mm x 300 mm	**meter**	**2181.00**
(ii)	Size of pile - 500 mm x 500 mm	**meter**	**3155.00**
(iii)	Size of pile - 750 mm x 750 mm	**meter**	**5501.00**
13.21	**Pile Load Test on single Vertical Pile in accordance with IS:2911(Part-IV)**		
(i)	Initial and routine load test	**Tonne**	**1500.00**
(ii)	Lateral load test	**Tonne**	**75000.00**
13.22	**Cement concrete for reinforced concrete in pile cap** complete as per drawing and Technical Specifications per clause 1100,1500 and 1700.		
A	**Using concrete mixer**		
(i)	RCC Grade M25	**cum**	**5915.00**
(ii)	RCC Grade M30	**cum**	**5973.00**

Item No.	Descriptions	Unit	Rate (Rs.)
(iii)	RCC Grade M35	**cum**	**6094.00**
B	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	RCC Grade M25	**cum**	**5757.00**
(ii)	RCC Grade M30	**cum**	**5821.00**
(iii)	RCC Grade M35	**cum**	**5935.00**
13.23	**Levelling course for Pile cap** (Providing and laying of P.C.C.M-15 levelling course 100mm thick below the pile cap.)	**cum**	**4710.00**
13.24	**Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation** complete as per drawing and technical specifications as per section 1600.	**MT**	**91109.00**
13.25	**Taking exploratory boring 100 mm dia** at the location of piers and abutments or for high embankments in approaches in all types of strata as per I.R.C. 78-1983 and section 2400 of specifications.		
(i)	Upto 1.0 m below bed level	**each**	**6546.00**
(ii)	Beyond 1.0 m upto 5.0 m depth	**meter**	**1430.00**
(iii)	Beyond 5.0 m depth	**meter**	**1623.00**
13.26	**Providing and laying 1.5 m deep in rock and 1.5 m above rock 25 mm dia Tor Steel dowel bars in foundation** including drilling 65mm dia bore hole in rock necessary bending, hooking, tying, reinforcement in position and grouting etc. complete as per drawings and specifications.	**each**	**1117.00**

CHAPTER – 14
SUB-STRUCTURE

Item No.	Descriptions	Unit	Rate (Rs.)
14.1	Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and technical specifications as per section 1300 and 2200	**cum**	**6088.00**
14.2	Add extra to item above if fly ash brick work are used	**cum**	**609.00**
14.3	Pointing with cement mortar (1:3) on brick work in substructure as per Technical specifications section 1300 and 2200	**sqm**	**71.00**
14.4	Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical specifications section 1300 and 2200	**sqm**	**132.00**
14.5	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications section 1400 and 2200		
(i)	Random Rubble Masonry	**cum**	**4540.00**
(ii)	Coursed rubble masonry (first sort)	**cum**	**4816.00**
(iii)	Ashlar masonry (first sort)	**cum**	**5967.00**
14.6	Providing and laying Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications section 1500, 1700 and 2200		
A	**Height upto 5m**		
(a)	**Using concrete Mixer**		
(i)	P.C.C. Grade M-15	**cum**	**5147.00**
(ii)	P.C.C. Grade M-20	**cum**	**5760.00**
(iii)	P.C.C. Grade M-25	**cum**	**6514.00**
(iv)	P.C.C. Grade M-30	**cum**	**6601.00**
(b)	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	P.C.C. Grade M-25	**cum**	**6331.00**
(ii)	P.C.C. Grade M-30	**cum**	**6412.00**
B	**Height 5m to 10m**		
(a)	**Using concrete Mixer**		
(i)	P.C.C. Grade M-25	**cum**	**6751.00**
(ii)	P.C.C. Grade M-30	**cum**	**6841.00**
(b)	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	P.C.C. Grade M-25	**cum**	**6561.00**
(ii)	P.C.C. Grade M-30	**cum**	**6645.00**
C	**Height above 10m**		
(a)	**Using concrete Mixer**		
(i)	P.C.C. Grade M-25	**cum**	**7047.00**
(ii)	P.C.C. Grade M-30	**cum**	**7141.00**
(b)	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	P.C.C. Grade M-25	**cum**	**6849.00**
(ii)	P.C.C. Grade M-30	**cum**	**6937.00**

Item No.	Descriptions	Unit	Rate (Rs.)
D	**Height upto 5m**		
(a)	**Using concrete Mixer**		
(i)	R.C.C. Grade M-20	**cum**	**5791.00**
(ii)	R.C.C. Grade M-25	**cum**	**6551.00**
(iii)	R.C.C. Grade M-30	**cum**	**6582.00**
(iv)	R.C.C. Grade M-35	**cum**	**6721.00**
(b)	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	R.C.C. Grade M-20	**cum**	**5603.00**
(ii)	R.C.C. Grade M-25	**cum**	**6366.00**
(iii)	R.C.C. Grade M-30	**cum**	**6398.00**
(iv)	R.C.C. Grade M-35	**cum**	**6535.00**
E	**Height 5m to 10m**		
(a)	**Using concrete Mixer**		
(i)	R.C.C. Grade M-20	**cum**	**6001.00**
(ii)	R.C.C. Grade M-25	**cum**	**6766.00**
(iii)	R.C.C. Grade M-30	**cum**	**6767.00**
(iv)	R.C.C. Grade M-35	**cum**	**6868.00**
(b)	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	R.C.C. Grade M-20	**cum**	**5807.00**
(ii)	R.C.C. Grade M-25	**cum**	**6574.00**
(iii)	R.C.C. Grade M-30	**cum**	**6578.00**
(iv)	R.C.C. Grade M-35	**cum**	**6678.00**
F	**Height above 10m**		
(a)	**Using concrete Mixer**		
(i)	R.C.C. Grade M-20	**cum**	**6264.00**
(ii)	R.C.C. Grade M-25	**cum**	**7087.00**
(iii)	R.C.C. Grade M-30	**cum**	**7091.00**
(iv)	R.C.C. Grade M-35	**cum**	**7088.00**
(b)	**With Batching Plant, Transit Mixer and Concrete Pump**		
(i)	R.C.C. Grade M-20	**cum**	**6062.00**
(ii)	R.C.C. Grade M-25	**cum**	**6886.00**
(iii)	R.C.C. Grade M-30	**cum**	**6921.00**
(iv)	R.C.C. Grade M-35	**cum**	**7099.00**
14.7	**Supplying, fitting and placing HYSD bar reinforcement in sub-structure** complete as per drawing and technical specifications section 1600 and 2200	**MT**	**91509.00**
14.8	**Providing weep holes in Brick masonry/ Plain/ Reinforced concrete abutment, wing wall/return wall** with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical specifications section 2706 and 2200	**meter**	**375.00**

Item No.	Descriptions	Unit	Rate (Rs.)
14.9	**Back filling behind abutment**, wing wall and return wall complete as per drawing and Technical specification 710.1.4 of I.R.C. 78 and 2200(i) Granular material	**cum**	**1155.00**
14.10	**Providing and laying of Filter media** with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and technical specifications 710.1.4 of I.R.C. 78 and 2200	**cum**	**1144.00**
14.11	**Supplying, fitting and fixing in position true to line and level cast steel rocker bearing** conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications section 2000, 1000 and 2200	**Per tonne capacity**	**509.00**
14.12	**Supplying, fitting and fixing in position true to line and level forged steel roller bearing** conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications section 2000, 1000 and 2200	**Per tonne capacity**	**581.00**
14.13	**Supplying, fitting and fixing in position true to line and level sliding plate bearing** with PTFE surface sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clause 2004 of MoRTH Specifications section 2000 and 2200	**Per tonne capacity**	**908.00**
14.14	**Supplying, fitting and fixing in position true to line and level elastomeric bearing** conforming to IRC: 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications section 2000 and 2200	**Per cubic centimeter**	**1.20**
14.15	**Supplying, fitting and fixing in position true to line and level sliding plate bearing** with stainless steel plate sliding on stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specifications section 2000 and 2200	**Per tonne capacity**	**826.00**

Item No.	Descriptions	Unit	Rate (Rs.)
14.16	**Supplying, fitting and fixing in position true to line and level POT-PTFE bearing** consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete asper drawing and approved technical specifications.	**Per tonne capacity**	**244.00**
14.17	**Providing and fixing in position tar paper bearing** for slab as per approved drawings and specification	**sqm**	**73.00**
14.18	**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 retained by the wall.		
(A)	Assembling joining and laying of reinforcing elements with		
(i)	Galvanized carbon steel strips	**meter**	**533.00**
(ii)	Copper Strips	**meter**	**395.00**
(iii)	Aluminium Strips	**meter**	**289.00**
(iv)	Stainless steel strips	**meter**	**472.00**
(v)	Glass reinforced polymer/fibre reinforced polymer/ polymeric strips	**meter**	**595.00**
(vi)	Synthetic geogrids / geotextiles	**sqm**	**368.00**
(B)	Facing elements of RCC	**sqm**	**1232.00**

CHAPTER- 15
SUPER-STRUCTURE

Item No.	Descriptions	Unit	Rate (Rs.)
15.01	**Furnishing and Placing Reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specification sections 1500, 1600 and 1700**		
A	**RCC Grade M25**		
I	**For Solid Slab Super Structure**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**7108.00**
(ii)	Height 5m to 10m	**cum**	**7404.00**
(iii)	Height above 10m	**cum**	**7700.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	**cum**	**6910.00**
(ii)	Height 5m to 10m	**cum**	**7198.00**
(iii)	Height above 10m	**cum**	**7485.00**
II	**For T-beam & slab**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**7404.00**
(ii)	Height 5m to 10m	**cum**	**7700.00**
(iii)	Height above 10m	**cum**	**7996.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	**cum**	**7198.00**
(ii)	Height 5m to 10m	**cum**	**7485.00**
(iii)	Height above 10m	**cum**	**7773.00**
B	**RCC Grade M 30**		
I	**For Solid Slab Super Structure**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**7221.00**
(ii)	Height 5m to 10m	**cum**	**7522.00**
(iii)	Height above 10m	**cum**	**7823.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	**cum**	**6988.00**
(ii)	Height 5m to 10m	**cum**	**7279.00**
(iii)	Height above 10m	**cum**	**7570.00**
II	**For T-beam & slab**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**7522.00**
(ii)	Height 5m to 10m	**cum**	**7823.00**
(iii)	Height above 10m	**cum**	**8124.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	**cum**	**7279.00**
(ii)	Height 5m to 10m	**cum**	**7570.00**
(iii)	Height above 10m	**cum**	**7862.00**

Item No.	Descriptions	Unit	Rate (Rs.)
C	**RCC/PSC Grade M35**		
I	**For Solid Slab Super Structure**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**7250.00**
(ii)	Height 5m to 10m	**cum**	**7557.00**
(iii)	Height above 10m	**cum**	**7864.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	**cum**	**7016.00**
(ii)	Height 5m to 10m	**cum**	**7313.00**
(iii)	Height above 10m	**cum**	**7610.00**
II	**For T-beam & slab**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**7557.00**
(ii)	Height 5m to 10m	**cum**	**7864.00**
(iii)	Height above 10m	**cum**	**8172.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	**cum**	**7313.00**
(ii)	Height 5m to 10m	**cum**	**7610.00**
(iii)	Height above 10m	**cum**	**7907.00**
III	**For Box Girder and Balanced Cantilever**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**8479.00**
(ii)	Height 5m to 10m	**cum**	**9093.00**
(iii)	Height above 10m	**cum**	**9708.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	**cum**	**8205.00**
(ii)	Height 5m to 10m	**cum**	**8799.00**
(iii)	Height above 10m	**cum**	**9394.00**
D	**PSC Grade M-40**		
I	**For Solid Slab Super Structure**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**7517.00**
(ii)	Height 5m to 10m	**cum**	**7830.00**
(iii)	Height above 10m	**cum**	**8143.00**
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	**cum**	**7101.00**
(ii)	Height 5m to 10m	**cum**	**7402.00**
(iii)	Height above 10m	**cum**	**7703.00**
II	**For T-beam & slab**		
(a)	**Using Concrete Mixer**		
(i)	Height upto 5m	**cum**	**7830.00**
(ii)	Height 5m to 10m	**cum**	**8143.00**

Item No.	Descriptions	Unit	Rate (Rs.)
(iii)	Height above 10m	cum	8456.00
(b)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	cum	7402.00
(ii)	Height 5m to 10m	cum	7703.00
(iii)	Height above 10m	cum	8004.00
III	**For cast in situ Box Girder, Segment Construction and Balanced Cantilever**		
	Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	Height upto 5m	cum	8305.00
(ii)	Height 5m to 10m	cum	8907.00
(iii)	Height above 10m	cum	9509.00
E	**PSC Grade M-45**		
I	**For solid slab/voided slab super-structure**		
(a)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	cum	7316.00
(ii)	Height 5m to 10m	cum	7631.00
(iii)	Height above 10m	cum	7946.00
II	**For T-beam & slab including launching of precast girders by launching truss upto 40 m span**		
(a)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	cum	7631.00
(ii)	Height 5m to 10m	cum	7946.00
(iii)	Height above 10m	cum	8262.00
III	**For cast-in-situ box girder, segmental construction and balanced cantilever**		
(a)	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	Height upto 5m	cum	8577.00
(ii)	Height 5m to 10m	cum	9208.00
(iii)	Height above 10m	cum	9838.00
F	**PSC Grade M-50**		
	For cast-in-situ box girder,segmental construction and balanced cantilever Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	Height upto 5m	cum	8792.00
(ii)	Height 5m to 10m	cum	9443.00
(iii)	Height above 10m	cum	10095.00
G	**PSC Grade M-55**		
	For cast-in-situ box girder, segmental construction and balanced cantilever		
	Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	Height upto 5m	cum	9228.00
.(ii)	Height 5m to 10m	cum	9911.00
(iii)	Height above 10m	cum	10595.00

Item No.	Descriptions	Unit	Rate (Rs.)
15.2	**Supplying, fitting and placing HYSD bar reinforcement** in super-structure complete as per drawing and technical specifications	**MT**	**93053.00**
15.3	**High tensile steel wires/strands including all accessories for stressing**, stressing operations and grouting complete as per drawing and Technical Specifications	**MT**	**187159.00**
15.4	**Providing and laying Cement concrete wearing coat M-30 grade** including reinforcement complete as per drawing and Technical Specifications	**cum**	**13792.00**
15.5	**Mastic Asphalt** (Providing and laying 25 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-39, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per section 500 & relevant clause of 2700.)	**Sqm.**	**731.00**
15.6	**Construction of precast RCC railing of M30 Grade**, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications as per relevant clauses of section 1500, 1600, 1700 and 2703 (vide drawing No. SD/202, SD/304)	**meter**	**2305.00**
15.7	**Construction of RCC railing of M30 Grade in-situ with 20 mm** nominal size aggregate, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications. (vide drawing No. SD/201, SD/304)	**meter**	**2230.00**
15.8	**Providing, fitting and fixing mild steel railing** complete as per drawing and Technical Specification and as per relevant clauses of section 1900 and 2703.2	**meter**	**3783.00**
15.9	**Providing and Fixing in position collapsible pipe railing** of approved design including 2 coats painting etc. complete with channel post I.C.M.C. 100x50mm (0.95m high) and 48.4mm outer dia lighter type class "A" **G.I. pipe** excluding cost of end concrete post.	**meter**	**1684.00**
15.10	**Drainage Spouts** complete as per drawing and Technical specifications of section 2705	**each**	**2505.00**

Item No.	Descriptions	Unit	Rate (Rs.)
15.11	**PCC M15 Grade leveling course below approach** slab complete as per drawing and Technical specification and as per relevant section 2700	**cum**	**4679.00**
15.12	**Providing and laying M-30 grade Reinforced cement concrete** approach slab including reinforcement and formwork complete as per drawing and Technical specification and as per relevant sections 1500, 1600, 1700 and 2704	**cum**	**10576.00**
15.13	**Providing anti-corrosive treatment to HSD (High Strength Deformed Steel)** reinforcement with Fusion Bonded Epoxy Coating (FBEC) (To be taken as per the prevailing market rates.)	**tonne**	**24420.00**
15.14	**Providing and fixing Helical pipes of 600mm dia in voided concrete** slabs including 20mm dia tie rod and sealing joints etc. as per section 1700 and 1800.	**M**	**740.00**
15.15	**Filler joint**		
A	Providing & fixing 2 mm thick corrugated copper plate (12 m long x 25 cm wide) in expansion joint complete as per drawing & Technical Specification.	**sqm**	**21964.00**
B	Providing & fixing 20 mm thick compressible fiber board (12 m long x 25 cm deep) in expansion joint complete as per drawing & Technical Specification.	**sqm**	**1224.00**
C	Providing and fixing in position 20 mm thick premoulded joint filler (12 m long x 30 cm deep) in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.	**sqm**	**703.00**
D	Providing and filling joint sealing compound (12 m long x 100 mm wide x 10 mm deep recess) as per drawings and technical specifications with coarse sand and 6% bitumen by weight	**sqm**	**320.00**
15.16	**Asphaltic Plug joint** (Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of wieldable structural steel conforming to IS: 2062, asphaltic plug to consist of polymer modified bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking/backer rod, all as per approved drawings and specifications section 2600)	**meter**	**1907.00**

Item No.	Descriptions	Unit	Rate (Rs.)
15.17	**Elastomeric Slab Steel Expansion** Joint Providing and laying of an elastomeric slab steel expansion joint, catering to right or skew (less than 20 deg., moderately curved with maximum horizontal movement upto 50 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorized representative ensuring compliance to the manufacturer's instructions for installation and clause 2606 of MoRTH specifications for road & bridge works.	**meter**	**20164.00**
15.18	**Compression Seal Joint**	**meter**	**11708.00**
	Providing and laying of compression seal joint consisting of steel armoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and fixed into the joint gap with special adhesive binder to cater for a horizontal movement upto 40 mm and vertical movement of 3 mm.		
15.19	**Strip Seal Expansion Joint** (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorized representative ensuring compliance to the manufacturer's instructions for installation.)	**meter**	**11146.00**
15.20	**Modular Strip / Box Seal Joint**		
A	(Providing and laying of a modular strip Box steel expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	**meter**	**29894.00**
B	Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	**meter**	**35322.00**
15.21	**Painting on kerbs** in black and yellow alternate bands including cost of material and labour complete as per drawings and specifications as per clause 803.		
	With Road Marking Paint	**RM**	**62.00**

Item No.	Descriptions	Unit	Rate (Rs.)
15.22	**Painting on concrete surface of R.C.C. Railing** (Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 Sq.m.)	**Sqm**	**182.00**
15.23	**Providing and Fixing of Av. 20mm thick marble plate** i/c cutting and polishing and inscribed details as per approved drawing i/c engraving the matter as desired.	**each**	**5500.00**
15.24	**Providing and Fixing of Av. 20mm thick Granite plate** including cutting and polishing and inscribed details as per approved drawing i/c engraving the matter as desired.	**each**	**7260.00**
15.25	**Testing of span of bridge for deflection** due to live load with platform for loading arrangements, apparatus for measurement etc. complete as per drawing and specifications (As per I.R.C.S.P.51)	**tonne**	**935.00**
15.26	**Performing detailed survey and investigation** and collection of hydraulic datas (essential design data as per I.R.C special publication No. 13) consisting of catchment area, L-section of road and stream, cross section of stream at the point of crossing, at up-stream and down stream site, as well as trial pit section result ascertaining and marking of H.F.L., O.F.L., transferring and fixing of pucca bench marks at site etc. complete i/c cost of necessary materials and labour required for survey work.(Sub-Engineer to be engaged from regular establishment)		
(i)	**For catchment areas less than 1.25 sq Km.**	**each**	**3436.00**
(ii)	**For catchment areas 1.25 to 2.5 sq.Km.**	**each**	**4187.00**
(iii)	**For catchement areas 2.5 to 10 sq.Km.**	**each**	**5058.00**
15.27	**Providing & fixing in position structural steel expansion joint** i/c. cutting riveting bolting welding as per MoRTH Std. drawing No. BD/1-69 'B' and specification as per section 1000, 1900 and 2600	**metre**	**2750.00**
15.28	**Providing and fixing for hand railing top of crash brier** including cost of material complete as per approved drawing	**RM**	**660.00**
15.29	**Providing & filling 37/40 mm. wide expansion joint** between spans in wearing coat with premoulded joint filler, primer coat and joint sealing compound as per MoRTH standard drawing No. BD/1-69 'B' and specifications as per section 2600 in:-		
(i)	R.C.C. 75 mm deep wearing coat	**metre**	**165.00**
(ii)	Asphaltic concrete 56 mm. deep wearing coat.	**metre**	**132.00**

CHAPTER- 16
RIVER TRAINING AND PROTECTION WORKS

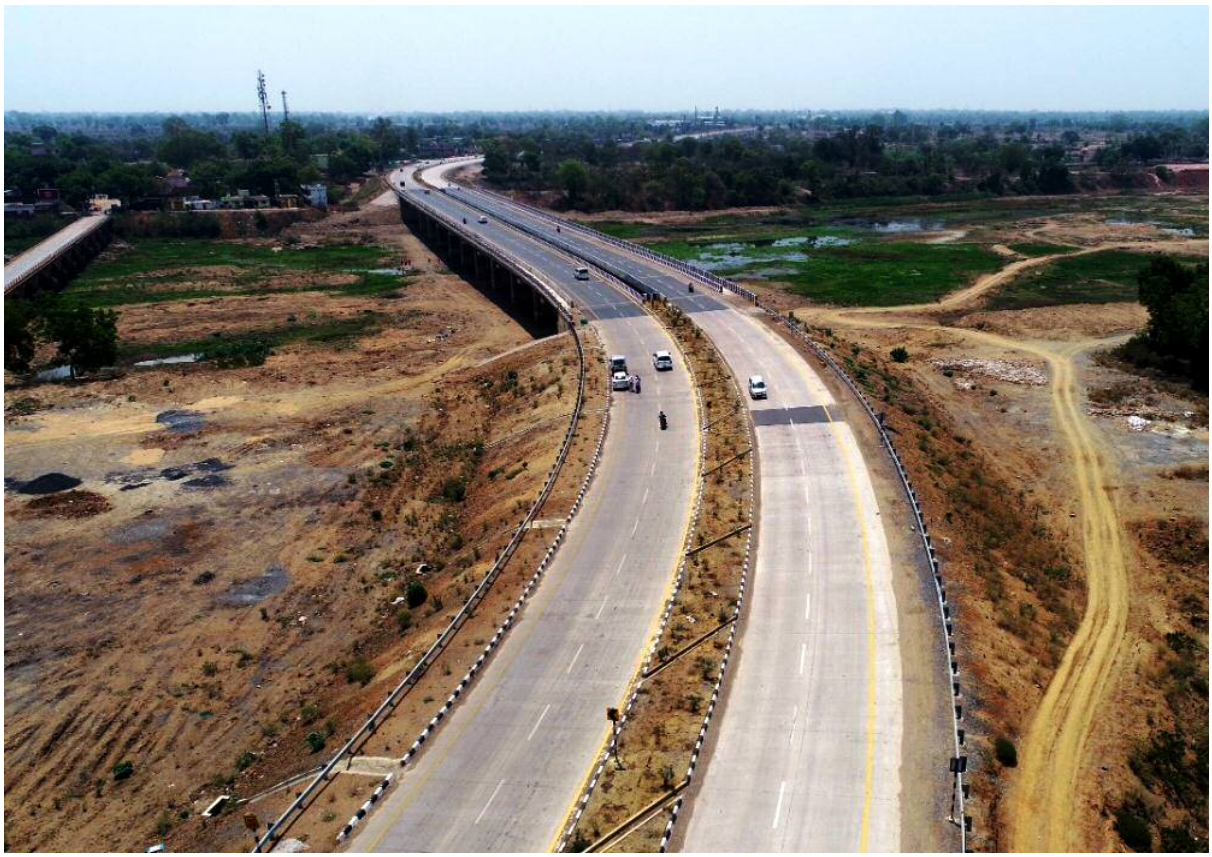
Item No.	Descriptions	Unit	Rate (Rs.)
16.1	**Providing and laying boulders apron on river bed** for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification as per relevant clauses of section 2503	**cum**	**1908.00**
16.2	**Providing and laying of boulder apron laid in wire crates** made with 4mm dia GI wire conforming to IS: 280 & IS:4826 in 100mm x 100mm mesh (weaved diagonally) including 10% extra for laps and joints laid with stone boulders weighing not less than 40 kg each	**cum**	**3168.00**
16.3	**Providing and laying of apron with cement concrete** blocks of size 0.5x0.5x0.5 m cast in-situ and made with nominal mix of M-15 grade cement concrete with a minimum cement content of 250 kg/cum as per IRC: 21-2000	**cum**	**4963.00**
16.4	**Providing and laying Pitching on slopes laid over** prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications as per section 2504		
A	Stone/Boulder	**cum**	**1908.00**
B	**Cement Concrete blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15**	**cum**	**4963.00**
16.5	**Providing and laying Filter material** underneath pitching in slopes complete as per drawing and Technical specification including trimming of slopes to proper profile and preparation of bed as per section 2504	**cum**	**1384.00**
16.6	**Laying of a geotextile filter between pitching and embankment** slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching as per any relevant section 700 and 2504 of specifications.	**sqm**	**406.00**
16.7	**Providing and laying Flooring** complete as per drawing and Technical specifications laid over cement concrete bedding as per section 2505		
A	Rubble stone laid in cement mortar 1:3	**cum**	**5351.00**
B	Cement Concrete blocks Grade M15	**cum**	**6536.00**
16.8	**Construction of Dry rubble Flooring** at cross drainage works for relatively less important works as per section 2506 of specifications.	**cum**	**2406.00**
16.9	**Curtain wall complete as per drawing and Technical specification as per section 2507.2**		
A	Coursed Rubble masonry (1^{st} sort)	**cum**	**4566.00**
B	Cement concrete Grade M15	**cum**	**4866.00**

Item No.	Descriptions	Unit	Rate (Rs.)
16.10	**Construction of flexible apron 1 m thick** comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.	**cum**	**2000.00**
16.11	**Providing and construction of a gabain structure** for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5 m compartments by cross netting, made from 4 mm galvanized steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire	**cum**	**3374.00**
16.12	**Providing and constructing gabain structures** for erosion control, river training works and protection works with wire crates of size 2 m x 1 m x 0.3 m each divided into 1m compartments by cross netting, made from 4 mm galvanized steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be securely tied with 4 mm galvanized steel wire.	**cum**	**5564.00**
16.13	**Providing and laying brick on edge flooring with 1st class bricks** including cement slurry in cement sand mortar 1:4 complete as per drawing and specifications as per section 1000 & 1300.	**sqm**	**314.00**
16.14	**Providing cement pointing 1:2 flush on brick on edge floor** complete as per drawing and specifications as per section 1000 & 1300.	**sqm**	**68.00**
16.15	**Providing cement plaster 12 mm thick in cement mortar 1:3** complete as per drawing and specifications as per section 1000 & 1300.	**sqm**	**110.00**
16.16	**Providing "Antirust Chemical coating" on the work of reinforcement** (Providing antirust corrosive treatment to HYSD reinforcement with antirust chemical -Zinc rich epoxy resin coating as per section 1600)	**MT**	**1073.00**
16.17	**Grouting with C.M. 1:4 in Pitching** as per drawing in technical specification	**cum**	**1100.00**

CHAPTER- 17
REPAIR AND REHABILITATION

Item No.	Descriptions	Unit	Rate (Rs.)
17.1	**Removal of existing cement concrete** wearing coat including its disposal complete as per Technical specification without causing any detrimental effect to any part of the bridge structure and removal of dismantled material with all lifts and lead upto 1000m as per section 2809	**sqm**	**120.00**
17.2	**Removal of existing asphaltic wearing coat** comprising of 50 mm thick asphaltic concrete laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000m as per section 2809	**sqm**	**90.00**
17.3	**Guniting concrete surface with cement mortar** applied with compressor after cleaning surface and spraying with epoxy complete as per Technical specification section 2807 (Thickness 25mm)	**sqm**	**1393.00**
17.4	**Providing and inserting nipples with approved** fixing compound after drilling holes for grouting as per Technical specifications including subsequent cutting/removal and sealing of the hole as necessary of nipples after completion of grouting with Cement/Epoxy	**each**	**184.00**
17.5	**Sealing of cracks/porous concrete** by injection process through nipples/Grouting complete as per Technical specification section 2806		
A	Cement Grout	**kg**	**109.00**
B	Cement mortar (1:1) Grouting	**kg**	**223.00**
17.6	**Patching of damaged concrete surface** with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer and as approved by the Engineer. (Av. thickness 25mm)	**sqm**	**4708.00**
17.7	**Sealing of crack / porous** concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.	**kg**	**1663.00**
17.8	**Applying epoxy mortar over leached**, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification section 2804 (10mm thick epoxy mortas)	**sqm**	**950.00**
17.9	**Removal of defective concrete, cleaning** the surface thoroughly, applying the shotcrete mixture mechanically with compressed air under pressure, comprising of cement, sand, coarse aggregates, water and quick setting compound in the proportion as per clause 2807.1., sand and coarse aggregates conforming to IS: 383 and table 1 of IS: 9012 respectively, water cement ratio ranging from 0.35 to 0.50, density of gunite not less than 2000 kg/cum, strength not less than 25 Mpa and workmanship conforming to clause 2807.6. (40mm average thickness)	**sqm**	**1374.00**

Item No.	Descriptions	Unit	Rate (Rs.)
17.10	**Applying pre-packed cement** based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete(thickness 10mm)	**sqm**	**295.00**
17.11	**Eproxy bonding of new concrete to old concrete**	**sqm**	**1297.00**
17.12	**Providing external prestressing** with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification section 2810		
A	For span = 25 m (4 no. of cables and 8 no anchorage)	**tonne**	**438314.00**
B	For span = 50 m (4 no.of cables and 8 no anchorage)	**tonne**	**422883.00**
C	For span = 100 m (6 no of cables and 12 no anchorage)	**tonne**	**386002.00**
17.13	**Replacement of bearings** complete as per Technical specification section 2808 (the work entails replacement of all the bearings on one site of span)	**each**	**46957.00**
17.14	**Replacement of Expansion Joints** complete as per drawings (Removal of old expansion joint)	**meter**	**3652.00**
17.15	**Replacement of damaged concrete railing** (Dismantling the old railing and disposal of dismantled material)	**meter**	**2144.00**
17.16	**Replacement of damaged mild steel railing** (Dismantling of old railing and disposal of dismantled material)	**meter**	**3232.00**
17.17	**Repair of concrete crash barrier** with cement concrete of M-30 grade by cutting and trimming the damaged portion to a regular shape, cleaning the area to be repaired thoroughly, applying cement concrete after erection of proper form work	**meter**	**215.00**
17.18	**Repair of R.C.C. railing :** Carrying out repair of RCC M-30 railing to bring it to the original shape	**meter**	**156.00**
17.19	**Repair of steel railing :** Repair of steel railing to bring it to the original shape (It is assumed that damage to the steel railing is to the extent of 10 percent.)	**meter**	**359.00**



NATIONAL HIGHWAY ZONE,
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