GOVERNMENT OF CHHATTISGARH

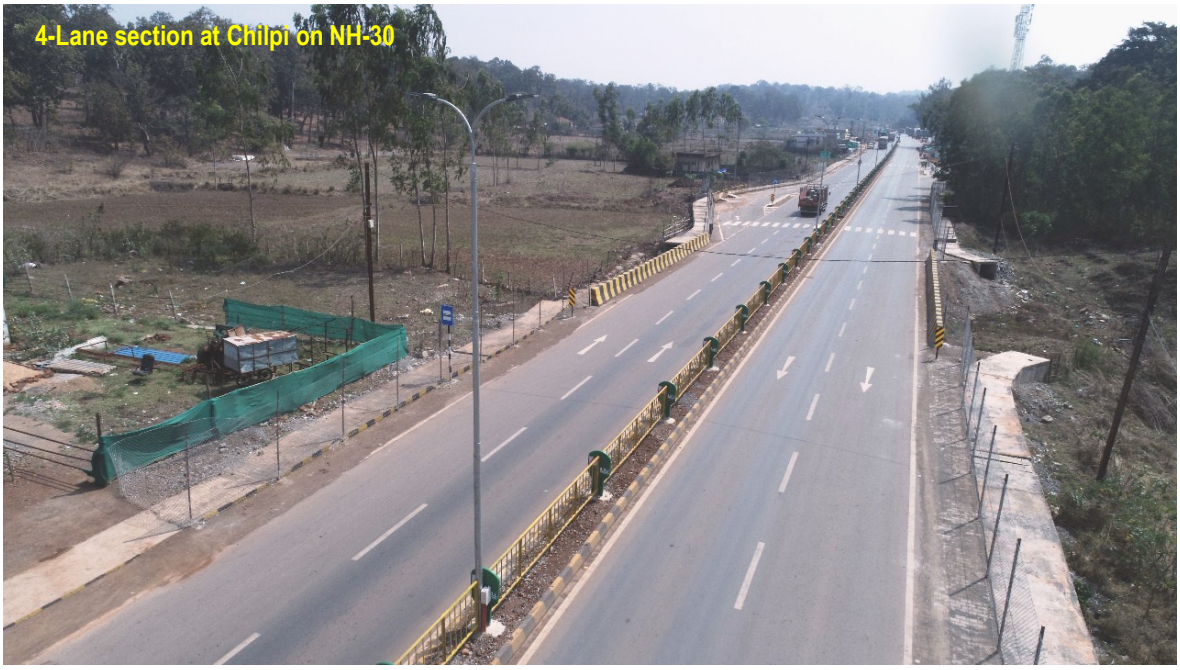
PUBLIC WORKS DEPARTMENT

NATIONAL HIGHWAY ZONE

SCHEDULE OF RATES

FOR

ROAD & BRIDGE WORKS



With Effect From 01st July, 2022

Issued By

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

Price : Rs. 1000/-
(Excluding Postage Charges etc.)

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

SCHEDULE OF RATES FOR ROAD & BRIDGE WORKS OF NH ZONE

No.920/WORKS/CE/NH/SOR **Raipur, Dated 01/07/2022**

PREAMBLE

The Schedule of Rates was published by Chief Engineer, National Highway Zone, PWD, Raipur on 01.06.2021 for Road & Bridge works of National Highway Zone. Revised Schedule of Rates has been prepared and now it is applicable with effect from **01st July, 2022** 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. The MoRTH has also revised the Standard Data Book for Analysis of Rate in 2019. 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, (c) The current royalty and other taxes except GST and (d) new items as per revised Standard Data Book & innovative materials have also been introduced. 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 **01st July, 2022** & shall be applicable for all works of National Highways only in the state of Chhattisgarh.

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.

I would also commend Shri B. Shrinivas Rao (Executive Engineer), Shri U S Verma (Executive Engineer), Shri Govind Ahirwar (Assistant Engineer), Shri Ranjit A. Ghatge (Assistant Engineer), Smt. Pragya Nand (Assistant Engineer) & Shri Hasan Ansari (Data Entry Operator) for their continuous untiring efforts in the above mission.

At the last I would like to convey sincere thanks to all members of SOR Revision Committee - 2022, who have made sincere efforts to prepare this document.

11/7/2022

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

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GENERAL NOTES
ROAD & BRIDGE WORKS

1)	**SOR-2022** 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" (Vth Revision) published by the Indian roads Congress in April 2013, on behalf of the Government of India, Ministry of Road Transport & Highways and relevant IRC & IS Codes.
	(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-40 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 (Vth 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 with vertical shaft.		
16)	The effective 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%.		
17)	The work of shoulders must precede the work of Sub-base and Base courses and succeed the Bituminous courses and Cement Concrete pavement.		
18)	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.		
19)	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.		
20)	Use of cement of required specifications at the rate minimum 2% by weight of total aggregate as filler for Bituminous Concrete and Dense Bituminous Macadam is mandatory. Lime shall not be used as filler.		
21)	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.	
22)	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.	
23)	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.		

24)	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.	
25)	The Contractor will carry out dismantling of utilities under the supervision of the concerned department with prior information to the users/Authority.	
26)	The girth of trees shall be measured at 1.00 meter (One meter) above ground level.	
27)	Rates of site clearance include jungle clearance leveling and dressing.	
28)	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.	
29)	In case of any contradiction in the provisions of the Specifications and this Schedule of Rates, the provisions of the SOR would take precedence.	
30)	The Basic rates of bituminous materials considered in this SOR are based on rates as follows :	
	(a) Bitumen VG-40 (Bulk)	Rs. 53065.00 per M.T.
	(b) Bitumen VG-10 (Bulk)	Rs. 49435.00 per M.T.
	(c) Bitumen Emulsion	Rs. 62783.00 per M.T.
31)	Labour rates are based on Labour Commissioner of Chhattisgarh, Raipur under Minimum Wages Act, 1948 w.e.f. 01.04.2022.	

ROAD WORKS

CHAPTER-1
CARRIAGE AND SUPPLY OF MATERIALS

Item No.	*Reference to MoRTH Specification*	Descriptions	Unit	Rate excluding GST (in Rs.)
		(Volume to be computed as per provisions in clause 520)		
1.01	**520**	**Transportation of metal i/c loading & unloading**		
i)		For a lead upto 1 Km.	**cum**	**140.00**
ii)		Beyond 1 Kms. and upto 10 Kms.(Add extra for every 1 Km.)	**cum**	**11.60**
iii)		Beyond 10 Kms. and upto 20 Kms. (Add extra for every 1 Km.)	**cum**	**8.70**
iv)		Beyond 20 Kms. and upto 50 Kms. (Add extra for every 1 Km.)	**cum**	**8.10**
v)		Beyond 50 Kms. (Add extra for every 1 Km.)	**cum**	**7.50**
1.02	**-**	**Transportation of different other material i/c loading & unloading**		
			Rate as %age of metal transportation rates	
a)		Flag Stone/cut stone/brick	**cum**	**40% above**
b)		Masonry stones	**cum**	**75% above**
c)		Rubble	**cum**	**15% above**
d)		Loose moorum/sand/earth/surkhi/cement/stone dust/ fly ash/ 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**
1.03	**-**	**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.**	**173.70**
b)		Beyond 10 Kms. and up to 50 Kms. add extra over a) above	**Per Km.**	**124.00**
c)		Beyond 50 Kms. add extra over b) above.	**Per Km.**	**113.00**

Item No.	*Reference to MoRTH Specification*	Descriptions	Unit	Rate excluding GST (in Rs.)
ii)		Loading of trucks (by manual means)	**Cum.**	**297.00**
iii)		Unloading of trucks and stacking (by manual means)	**Cum.**	**297.00**
1.04		**Hire charges for machineries : (only working hours to be paid and idle hours not to be paid)**		
i)		Tractor with trolley	**Hour**	**600.00**
ii)		Tractor with ripper	**Hour**	**379.00**
iii)		Tractor mounted water tanker (6 KL)	**Hour**	**375.00**
iv)		Truck mounted water tanker (12 KL)	**Hour**	**650.00**
v)		Crawler mounted Crane for lifting		
		a) 35 T capacity	**Hour**	**1000.00**
		b) 80 T capacity	**Hour**	**1800.00**
		c) 100 T capacity	**Hour**	**2500.00**
vi)		Mobile Hydraulic Crane		
		a) 5 T capacity	**Hour**	**650.00**
		b) 10 T capacity	**Hour**	**850.00**
		c) 15 T capacity	**Hour**	**1050.00**
		d) 20 T capacity	**Hour**	**1500.00**
		e) 35 T capacity	**Hour**	**2050.00**
vi)		Hydraulic excavator upto 1.0 Cum bucket	**Hour**	**1150.00**
vii)		Road rollers :		
		(a) Smooth wheeled roller 8 T	**Hour**	**600.00**
		(b) Tandem Road roller	**Hour**	**1000.00**
		(c) Pneumatic Road roller	**Hour**	**1200.00**
viii)		Tipper-5.5 Cum	**Hour**	**775.00**
x)		Paver Finisher Mechanical	**Hour**	**1000.00**
1.05	**520**	**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.**	**1561.00**
ii)		63 mm standard size broken stone	**Cum.**	**1702.00**
iii)		45 mm standard size broken stone	**Cum.**	**1819.00**
iv)		45 mm standard size Crushed stone	**Cum.**	**1319.00**
v)		22.4 mm standard size Crushed stone	**Cum.**	**1206.00**
vi)		13.2 mm standard size Crushed stone	**Cum.**	**1086.00**
vii)		11.2 mm standard size Crushed stone	**Cum.**	**1018.00**
viii)		6.7 mm standard size Crushed stone	**Cum.**	**993.00**
1.06	**520**	**Supply of fine aggregate and filler material** as per clause 520 including all lead and stacking etc. complete		
i)		Crusher stone dust	**Cum.**	**898.00**
ii)		Sand/Shingle/Kanker/Laterite	**Cum.**	**1089.00**
iii)		Moorum	**Cum.**	**624.00**
1.07	**504**	**Supplying, transporting and stacking of hot premixed bituminous macadam** using crushed aggregate of grading-2 confirming to clause 504 with binder content @ minimum 3.4% by weight of mix, transported from hot mix plant to site, inclusive of all	**MT**	**2952.00**

Item No.	*Reference to MoRTH Specification*	Descriptions	Unit	Rate excluding GST (in Rs.)
		leads.		
1.08	**-**	**Hire charges for Long Reach Hedge hand Trimmer machine,** Length: 2.5 Mtr (8 ft.),fully petrol operated 2 Stroke with having the displacement of 52cc along with attachment of paddy cutting TCT blade, paddy guard, tap n go, nylon trimmer etc. Rated Power(kW): 1.6 kW; Rated Power(HP): 2.2HP; Fuel Tank Capacity: 1200ml; Fuel Consumption: 600ml/hr; Oil (Mixing): 60ml(2T)oil in 1L of Petrol; RPM: 10000; Weight: 15 Kg (Approx)	**Hour**	**200.00**
1.09	**-**	**Hire Charges for Petrol Hedge Trimmer** 24 Inch equipped with a 600 mm double reciprocating cutting blade that has an effective cutting length of 600mm or 24 inch.	**Hour**	**180.00**

CHAPTER- 2
SITE CLEARANCE

Item No.	*Reference to MoRTH Specification*	Descriptions	Unit	Rate excluding GST (in Rs.)
2.01 (A)	**201**	**Cutting of trees, excluding removal of stumps and roots of trees (**Cutting of trees, trunks and branches excluding removal of stumps and roots of trees and stacking of serviceable material with all lifts and up to a lead of 1000 mtrs)		
(i)		Girth from 300 mm to 600 mm	**Each**	**413.00**
(ii)		Girth from 600 mm to 900 mm	**Each**	**496.00**
(iii)		Girth from 900 mm to 1800 mm	**Each**	**759.00**
(iv)		Girth above 1800 mm	**Each**	**1215.00**
2.01 (B)	**201**	**Cutting of Trees, including Cutting of Trunks, Branches and Removal** (Removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 metres and earth filling in the depression/pit.)		
(i)		Girth from 300 mm to 600 mm	**Each**	**585.00**
(ii)		Girth from 600 mm to 900 mm	**Each**	**839.00**
(iii)		Girth from 900 mm to 1800 mm	**Each**	**1463.00**
(iv)		Girth above 1800 mm	**Each**	**2574.00**
2.02	**201**	**Clearing Grass and Removal of Rubbish** (Clearing grass and removal of rubbish up to a distance of 50 metres outside the periphery of the area)	**Hectare**	**24928.00**
2.03	**201**	**Clearing and Grubbing Road Land .**(Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.)		
(i)		**By Manual Means:-**		
A		In area of light jungle	**Hectare**	**165132.00**
B		In area of thorny jungle	**Hectare**	**190060.00**
(ii)		**By Mechanical Meansby by Dozer**		
A		In area of light jungle	**Hectare**	**90984.00**
B		In area of thorny jungle	**Hectare**	**99005.00**
(iii)		**By Mechanical Means using by motor Grader**		
A		In area of light jungle	**Hectare**	**74438.00**
B		In area of thorny jungle	**Hectare**	**65792.00**
2.04	**202**	**Dismantling of Structures** (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting		

Item No.	*Reference to MoRTH Specification*	Descriptions	Unit	Rate excluding GST (in Rs.)
		the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres)		
(i)		**Lime /Cement Concrete**		
I		**By Manual Means**		
A		Lime Concrete, cement concrete grade M-10 and below	**cum**	**575.00**
B		Cement Concrete Grade M-15 & M-20	**cum**	**675.00**
C		Prestressed / Reinforced cement concrete grade M-20 & above	**cum**	**1661.00**
II		**By Mechanical Means for items No. 2.04 (b) & (c)**		
A		Cement Concrete Grade M-15 & M-20	**cum**	**1520.00**
B		Prestressed / Reinforced cement concrete grade M-20 & above	**cum**	**1798.00**
(ii)		**Dismantling Brick / Tile work**		
A		In lime mortar	**cum**	**351.00**
B		In cement mortar	**cum**	**451.00**
C		In mud mortar	**cum**	**311.00**
D		Dry brick pitching or brick soling	**cum**	**292.00**
(iii)		**Dismantling Stone Masonry**		
A		Rubble stone masonry in lime mortar	**cum**	**391.00**
B		Rubble stone masonry in cement mortar.	**cum**	**451.00**
C		Rubble Stone Masonry in mud mortar.	**cum**	**351.00**
D		Dry rubble masonry	**cum**	**331.00**
E		Dismantling stone pitching/ dry stone spalls.	**cum**	**311.00**
F		Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.	**cum**	**351.00**
III		**By Mechanical Means for items No. 2.04 (iii)**		
A		Dismantling Brick / Tile work/ rubble masonary/ pitching/ etc by mechanical means	**cum**	**150.00**
(iv)		Wood work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level	**cum**	**777.00**
(v)		**Steel work** in all types of sections upto a height of 5 m above plinth level excluding cutting of rivet.		
A		Including dismembering	**tonne**	**1949.00**
B		Excluding dismembering.	**tonne**	**1470.00**
C		Extra over item No(V) A and(V) B for cutting rivets.	**Each**	**14.00**
(vi)		**Scraping of bricks dismantled from brick work including stacking.**		
A		In lime/Cement mortar	**1000 numbers**	**1745.00**
B		In mud mortar	**1000 numbers**	**623.00**
(vii)		**Scraping of Stone from dismantled stone masonry**		

Item No.	*Reference to MoRTH Specification*	Descriptions	Unit	Rate excluding GST (in Rs.)
A		In cement and lime mortar	**cum**	**700.00**
B		In Mud mortar	**cum**	**148.00**
(viii)		**Scarping plaster** in lime or cement mortar from brick/ stone masonry	**sqm**	**22.00**
(ix)		**Removing all type of hume pipes** and stacking within a lead of 1000 metres including earthwork and dismantling of masonry works.		
A		Up to 600 mm dia	**metre**	**757.00**
B		Above 600 mm to 900 mm dia	**metre**	**868.00**
C		Above 900 mm	**metre**	**1090.00**
2.05	**202**	**Dismantling of Flexible Pavements** (Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately)		
I		**By Manual Means**		
A		Bituminous courses	**cum**	**871.00**
B		Granular courses	**cum**	**622.00**
II		**By Mechanical Means**		
A		Bituminous course	**cum**	**280.00**
B		Granular courses	**cum**	**51.00**
2.06	**202**	**Dismantling of Cement Concrete Pavement** (Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately)	**cum**	**1015.00**
2.07	**202**	**Dismantling Guard Rails** (Dismantling guard rails by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable materials and unserviceable materials separately.)	**metre**	**79.00**
2.08	**202**	**Dismantling Kerb Stone** (Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre)	**metre**	**18.00**
2.09	**202**	**Dismantling Kerb Stone channel** (Dismantling kerb stone channel by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre)	**metre**	**24.00**
2.10	**202**	**Dismantling Kilometre Stone** (Dismantling of kilometre stone including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and back filling of pit.)		
A		5th KM stone	**each**	**539.00**

Item No.	*Reference to MoRTH Specification*	Descriptions	Unit	Rate excluding GST (in Rs.)
B		Ordinary KM Stone	**each**	**323.00**
C		Hectometre Stone	**each**	**65.00**
2.11	**202**	**Dismantling of Fencing** (Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable material and unserviceable material separately.)	**metre**	**68.00**
2.12	**202**	**Dismantling of CI Water Pipe Line** (Dismantling of CI water pipe line 600 mm dia including disposal with all lifts and lead upto 1000 metres and stacking of serviceable material and unserviceable material separately under supervision of concerned department)	**metre**	**169.00**
2.13	**202**	**Removal of Cement Concrete Pipe of Sewer Gutter** (Removal of cement concrete pipe of sewer gutter 1500 mm dia under the supervision of concerned department including disposal with all lifts and up to a lead of 1000 metres and stacking of serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works.)	**metre**	**244.00**
2.14	**202**	**Removal of Telephone / Electric Poles and Lines** (Removal of telephone / Electric poles including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and up to a lead of 1000 metres and stacking the serviceable and unserviceable material separately)	**each**	**241.00**
		Note for item no.2.14: All the serviceable material resulting from removal of Telephone / Electric Poles and Lines would be handed over to the employer.		

CHAPTER- 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
3.01	**301**	**Excavation in Soil by Manual Means.** (Excavation for roadway in soil using manual means including loading in truck for carrying of cut earth to embankment site with all lifts and lead upto1000 metres as per relevant clauses of section 300).	**cum**	**260.00**
		Note for item 3.01: This item to be executed with prior permission of Chief Engineer, NH Zone, PWD.		
3.02	**301**	**Excavation in ordinary rock by manual means** (Excavation in ordinary rock using manual means including loading in a truck and carrying of excavated material to embankment site with in all lifts and leads upto 1000 metres as per relevant clauses of section 300)	**cum**	**364.00**
3.03	**301**	**Excavation in Soil with Dozer with lead upto 1000 metres (**Excavation for road way in soil by mechanical means including cutting and transporting the earth to site of embankment/dumping area with lead upto 1000 metres, including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections as per relevant clauses of section 300)	**cum**	**100.00**
3.04	**301**	**Excavation in Ordinary Rock with Dozer with lead upto 1000 metres** (Excavation for roadway in ordinary rock by deploying a dozer, including cutting and transporting the earth to site of embankment/dumping area with lead upto 1000 metres, trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections as per relevant clauses of section 300)	**cum**	**160.00**
3.05	**301**	**Excavation in Hard Rock (requiring blasting) with disposal upto 1000 metres** (Excavation for roadway in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metresas per relevant clauses of section 300)	**cum**	**924.00**
3.06	**301**	**Excavation in Soil using Hydraulic Excavator and Tippers with disposal upto 1000 metres.** (Excavation for roadwork in soil with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m as per relevant clauses of	**cum**	**72.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		section 300)		
3.07	**301**	**Excavation in Ordinary Rock using Hydraulic Excavator and Tippers with disposal upto 1000 metres.** (Excavation for roadwork in soil with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m as per relevant clauses of section 300)	**cum**	**626.00**
3.08	**301**	**Excavation in Hard Rock (blasting prohibited)** (Excavation for roadwork in Hard Rock (blasting prohibited) with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000 m as per relevant clauses of section 300)		
A		Mechanised	**cum**	**813.00**
B		Manual Method	**cum**	**1376.00**
3.09	**301**	**Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres** (Excavation for roadway in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres as per relevant clauses of section 300)	**cum**	**1229.00**
3.10	**301**	**Excavation in Marshy Soil** (Excavation for roadwork in Marshy Soil with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000 m as per relevant clauses of section 300)	**cum**	**146.00**
3.11	**300**	**Removal of Unserviceable Soil with Disposal upto 1000 metres** (Removal of unserviceable soil including excavation, loading and disposal upto 1000 metres lead but excluding replacement by suitable soil which shall be paid separately as per clause 300..)	**cum**	**73.00**
3.12		**Add extra over item No. 3.01, 3.03, 3.06, 3.10 & 3.11 here in above and 3.14(i) & 3.14(v) here in below for transportation** for disposal beyond 1.0 km lead.	**cum**	**vide item No. 1.01 & 1.02 of Chapter -1**
3.13	**303**	**Pre-splitting of Rock Excavation Slopes** (Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and	**sqm**	**266.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		spaced drill holes, collection of the excavated rock by a dozer, loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in section 300)		
3.14	**304**	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.) as per section 300.		
(i)		**Ordinary soil**		
A		Manual Means (Depth upto 3 m)	**cum**	**399.00**
B		Mechanical Means (Depth upto 3 m)	**cum**	**65.00**
(ii)		**Ordinary rock (not requiring blasting)**		
A		Manual Means (Depth upto 3 m)	**cum**	**499.00**
B		Mechanical Means	**cum**	**672.00**
(iii)		**Hard rock (requiring blasting)**		
A		Mechanical Means	**cum**	**1240.00**
(iv)		**Hard rock (blasting prohibited)**		
A		Mechanical Means	**cum**	**1469.00**
(v)		**Marshy soil**		
A		Manual means (upto 3 m depth)	**cum**	**696.00**
B		Mechanical Means	**cum**	**277.00**
		Note for Item 3.14, use of Manual Means only on prior approval of CE, NH Zone, PWD, Raipur		
3.15	**305.4.3**	**Scarifying Existing Road Surface to a Depth of 50 mm**		
(i)		**Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means** (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres as per clause 305.4.3);	**sqm**	**37.00**
(ii)		**Scarifying existing bituminous surface to a depth of 50 mm by mechanical means (using Hydraulic excavator)** (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres as per clause 305.4.3)	**sqm**	**14.00**
(iii)		**Scarifying existing bituminous surface to a depth of 50 mm by mechanical means (Using Motor Grader)** (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres as per clause 305.4.3)	**sqm**	**8.00**
		Note for item no. 3.15 (i), (ii) & (iii) : In case material is to be reused at site, transportation cost		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		catered above for disposal shall be deleted.		
3.16	**305.4.3**	**Scarifying Existing bituminous surface to a depth of 50 mm**		
(i)		**Scarifying existing bituminous surface to a depth of 50 mm by mechanical means Hydraulic excavator** (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres.)	**Sqm**	**10.00**
(ii)		**Scarifying existing bituminous surface to a depth of 50 mm by mechanical means using Motor Grader** (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres.)	**sqm**	**9.00**
3.17	**305**	**Embankment Construction with Material Obtained from Borrow Pits** (Construction of embankment with approved material / selected soil having effective CBR > 5 (unless specified otherwise in 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) as per clause 305.	**Cum**	**318.00**
		Note for item 3.17 : Compensation for earth will vary from place to place and will have to be assessed realistically as per particular ground situation. In case earth is available from Govt. land, compensation for earth will not be required. The position is required to be clearly stated in the cost estimate.		
3.18	**305**	**Construction of Embankment with Material Deposited from Roadway Cutting** (Construction of embankment with approved materials having effective CBR > 5 (unless specified otherwise in 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) as per clause 305.	**Cum**	**64.00**
3.19	**305**	**Construction of Sub-grade with Material Obtained from Borrow Pits** (Construction of sub-grade with approved material / selected soil having effective CBR > 8 (unless specified otherwise in contract) obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2) as per clause 305.	**cum**	**334.00**
3.20	**305**	**Construction of Sub-grade with Material Deposited from Roadway Cutting** (Construction of sub-grade with approved materials having effective CBR > 8 (unless specified otherwise in contract) deposited at site from roadway cutting and excavation from drain and foundation of other	**cum**	**43.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		structures graded and compacted to meet requirement of table 300-2.) as per clause 305.		
3.21	**305.3.4**	**Compacting Original Ground**		
Case-I		**Compacting original ground supporting embankment** (Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.) as per clause 305.3.4.	**cum**	**61.00**
Case-II		**Compacting original ground supporting sub-grade** (Loosening of the ground upto a level of 500 mm below the sub-grade level, watered, graded and compacted in layers to meet requirement of table 300-2 for sub-grade construction.) as per clause 305.3.4.	**cum**	**68.00**
3.22	**305**	**Stripping and Storing Top Soil** (Stripping, storing of top soil by road side at 15 m internal and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth) as per clause 305.	**cum**	**66.00**
3.23	**305**	**Stripping, storing and re-laying top soil from borrow areas in agriculture fields.** (Stripping of top soil from borrow areas located in agriculture fields, storing at a suitable place, spreading and re-laying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels and satisfaction of the farmer.) as per clause 305.	**cum**	**129.00**
3.24	**307**	**Turfing with Sods** (Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of rods and watering) as per clause 307.	**sqm**	**51.00**
3.25	**308**	**Seeding and Mulching** (Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of0.23 litres per sqm and laying and fixing jute netting, including watering for 3 months all as per clause 308)	**sqm**	**219.00**
3.26	**309**	**Surface Drains in Soil** (Construction of unlined surface drains of average cross sectional area 0.40 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of 50 metres (average lead 25 metres))		
A		**Mechanical means**	**metre**	**86.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
B		**Manual Means**	**metre**	**160.00**
3.27	**309**	**Surface Drains in Ordinary Rock** (Construction of unlined surface drain of average cross sectional area 0.4 sqm in ordinary rock to specified lines, grades, levels and dimensions as per approved design and to the requirement of clause 301 to 309. Excavated material to be used in embankment at site.)		
A		**Mechanical Means**	**metre**	**118.00**
B		**Manual Means**	**metre**	**227.00**
3.28	**309**	**Surface Drains in Hard Rock** (Construction of Surface Drains of size drain 600 x 450 mm in Hard Rock (blasting prohibited) with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting i/c all lifts and lead upto 1000 m as per relevant clauses of section 300)	**metre**	**372.00**
3.29	**309**	**Sub-Surface Drains with Perforated Pipe** (Construction of sub-surface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ cement concrete/PVC, closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site)	**metre**	**656.00**
3.30	**309**	**Aggregate Sub-Surface Drains** (Construction of aggregate sub-surface drain 300 mm x 450 mm with aggregates conforming to table 300-4, excavated material to be utilised in roadway)	**metre**	**197.00**
3.31	**310**	**Preparation and Surface Treatment of formation.** (Preparation and surface treatment of formation by removing mud and slurry, watering to the extent needed to maintain the desired moisture content, trimming to the required line, grade, profile and rolling with 8-10 tonne smooth wheeled roller, complete as per clause 310.)	**sqm**	**3.00**
3.32	**313**	**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**	**133.00**
3.33		**Embankment Construction with Fly ash/Pond ash available from coal or lignite burning Thermal Plants as waste material.** (Construction of		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		embankment with fly ash 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.)		
A		**Excluding Transportation of fly ash**	**cum**	**72.00**
B		**Including Transportation of fly ash**	**cum**	**773.00**
3.34		**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 RCC, 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.	**metre**	**6027.00**
(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 RCC, 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.	**metre**	**3111.00**
(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**	**530.00**
3.35	**309.3.6**	**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**	**1321.00**
3.36		**Providing Chute drains** consisting of NP-2 RCC	**metre**	**2165.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		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.		
3.37		**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 back filling with approved material.)	***cum***	**187.00**
(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.	***cum***	**6475.00**
		with RCC M-20		
(iii)		**Supplying, Fitting and Placing un-coated HYSD bar Reinforcement** in drain/cover/chamber complete as per Drawing and Technical Specifications.	***MT***	**81864.00**
3.38		**Add extra over all item no. 3.01 to 3.37 here in above for Works in Urban Roads** (Due to the cost of earth work/works in urban roads inhabited area will be comparatively higher)	**Cum**	**3%**

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

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
4.01	**401**	**Granular Sub-base with Close Graded Material (Table:- 400-1)**		
A		**Plant Mix Method with Mechanically crushed stone only**(Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401)		
(i)		for grading- I Material	**cum**	**1756.00**
(ii)		for grading- II Material	**cum**	**1663.00**
(iii)		for grading-III Material	**cum**	**1809.00**
(iv)		for grading-IV Material	**cum**	**1789.00**
(v)		for grading-V Material	**cum**	**1759.00**
(vi)		for grading-VI Material	**cum**	**1691.00**
4.02	**402**	**Lime Stabilisation for Improving Sub-grade**		
A		**By Manual Means**		
		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, **mixing the spread soil in place with rotavator with**3 % slaked lime having minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade) as per clause 402.	**cum**	**578.00**
B		**By Mechanical Means**		
(i)		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer & Binder Spreader with 2 percent slaked lime using Binder spreader Machine, having minimum content of 70 per cent 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**	**715.00**
(ii)		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with **Soil Stabilizer with 3% slaked lime mannualy spreaded** having minimum content of 70 per cent 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**	**683.00**
4.03	**403**	**Cement Stabilisation for Improving Subgrade**		
A		**By Manual Means**		
		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread	**cum**	**653.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		soil in place with Soil Stabilizer & Binder Spreader with 2 percent cement using Binder spreader Machine, 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 403.		
B		**Mechanical Means**		
(i)		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, **mixing the spread soil in place with Soil Stabilizer & Binder Spreader** with 2 percent cement using Binder spreader Machine, 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 403.	**cum**	**790.00**
(ii)		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, **mixing the spread soil in place with Soil Stabilizer** with 2 per cent **cement manually spreaded**, 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 403.	**cum**	**758.00**
4.04	**402**	**Lime Stabilisation for Improving Embankment**		
A		**By Manual Means**		
		Laying and spreading available soil in the embankment on a prepared surface, pulverising, **mixing the spread soil in place with rotavator with** 3 % slaked lime having minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade)	**cum**	**521.00**
B		**By Mechanical Means**		
(i)		Laying and spreading available soil in the embankment on a prepared surface, pulverising, **mixing the spread soil in place with Soil Stabilizer & Binder Spreader** with 2 per cent slaked lime using Binder spreader Machine, having minimum content of 70 per cent 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	**cum**	**656.00**
(ii)		Laying and spreading available soil in the embankment on a prepared surface, pulverising, mixing the **spread soil in place with Soil Stabilizer** with 3 per cent slaked lime manually spreaded having minimum content of 70 per cent 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.	**cum**	**624.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
4.05	**403**	**Cement Stabilisation for Improving Embankment**		
		By Mechanical Means		
(i)		Laying and spreading available soil in the emabankment n a prepared surface, pulverising, **mixing the spread soil in place with Soil Stabilizer & Binder Spreader** with 2 per cent cement using Binder spreader Machine, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade	**cum**	**720.00**
		By Manual Means		
(ii)		Laying and spreading available soil in the emabankment on a prepared surface, pulverising, **mixing the spread soil in place with Soil Stabilizer** with 2 per cent cement mannualy spreaded, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade	**cum**	**688.00**
4.06	**402**	**Lime Treated Soil for Sub- Base** (Providing, laying and spreading soil on a prepared sub grade, pulverising, mixing the spread soil in place with rotavator with 3 % slaked lime with minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98%of the max dry density to form a layer of sub base.),as per clause 402.	**cum**	**718.00**
4.07	**403**	**Cement Treated Soil Sub Base/ Base** (Providing, laying and spreading soil on a prepared sub grade, pulverising, adding the designed quantity of cement to the spread soil, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base.),as per clause 403.	**cum**	**949.00**
4.08	**403**	**Cement Treated Crushed Rock or combination as per clause 403 and table 400.4 in Sub base/ Base** (Providing, laying and spreading Material on a prepared sub grade, adding the designed quantity of cement 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.)		
(i)		**For Sub-Base course**	**cum**	**2057.00**
(ii)		**For Base course**	**cum**	**1958.00**
4.09	**403**	**Cement Treated Crushed Stone Sub base** (Construction of granular sub-base by providing graded Material, mixing with cement in a mechanical		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		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 as per clause 403).		
A		**Plant Mix Method (Using by Mechanical Paver)**		
(i)		Cement Treated Crushed Stone Sub base (Grading-III Material)	**cum**	**2476.00**
(ii)		Cement Treated Crushed Stone Sub base (Grading-IV Material)	**cum**	**2455.00**
4.10	**404.3.1**	**Making 50 mm x 50 mm Furrows** (Making 50 mm x 50 mm furrows, 50mm deep, 45 degree to the center line of the road and at one metre interval in the existing bituminous wearing coarse including sweeping and disposal of excavated material within 1000 metres lead) as per clause 404.3.1.	**sqm**	**11.00**
4.11	**404.3.2**	**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) as per clause 404.3.2.	**cum**	**1202.00**
4.12	**405**	**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 at a lead of L km., laying and compacting the same as sub base/ base course, constructed as WBM to clause 404 except the use of screening or binding Material), as per clause 405.	**cum**	**421.00**
4.13	**405.2**	**Penetration Coat Over Top Layer of Crushed Cement Concrete Base** (Spraying of bitumen over cleaned dry surface of crushed cement concrete base at the rate of 25 kg per 10 sqm by a bitumen pressure distributor, spreading of key aggregates at the rate of 0.13 cum per 10 sqm by a mechanical gritter and rolling the surface as per clause 506.3.8)	**sqm**	**23.00**
4.14	**406**	**Wet Mix Macadam / Interlocking layer laying**		
A		**Wet Mix Macadam / Interlocking layer laying Using Mechanical Paver** (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	**cum**	**1861.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		desired density.)as per clause 406.		
		Note for Item No. 4.14 A *use only on prior permission of CE, NH Zone, PWD, Raipur.*		
B		**Wet Mix Macadam / Interlocking layer laying using by Grader** (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**	**1842.00**
4.15	**406**	**Cement Treated Crushed Stone Base (Plant Mix Method)** (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**	**2523.00**
4.16	**407**	**Construction of Median and Island with Soil Taken from Roadway Cutting** (Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause 407)	**cum**	**292.00**
4.17	**408**	**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**	**360.00**
4.18	**408**	**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 royalty charges etc. complete.		
A		With vibratory roller	**cum**	**428.00**
B		With smooth wheeled roller	**cum**	**415.00**
4.19		**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	**cum**	**632.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		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))		
4.20		**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**	**837.00**
(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**	**528.00**
4.21		**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.		
A)		60mm thick Plain precast interlock concrete block	**Sqm**	**624.00**
B)		80mm thick Plain precast interlock concrete block	**Sqm**	**733.00**
C)		80mm thick Polymer coated coloured precast interlock concrete blocks	**Sqm**	**887.00**
D)		60mm thick Polymer coated coloured precast interlock concrete blocks	**Sqm**	**795.00**
4.22	**410**	**Footpaths and Separators** (Construction of footpath/separator by providing a 150 mm compacted granular sub base as per clause 401 and 25 mm thick cement concrete grade M15, over laid with precast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel..) as per clause 410.	**sqm**	**1989.00**
4.23	**407**	**Crusher Run Macadam Base** (Providing crushed stone aggregate, depositing on a prepared surface by hauling vehicles, spreading and mixing with a motor grader, watering and compacting with a vibratory roller to form a layer of sub-base/Base) as per clause 407.		
A		**By Mix in Place Method**		
(i)		For 53 mm maximum size	**cum**	**1608.00**
(ii)		For 45 mm maximum size	**cum**	**1525.00**
B		**By Mixing Plant :**		
(i)		For 53 mm maximum size	**cum**	**1643.00**
(ii)		For 45 mm maximum size	**cum**	**1570.00**
4.24	**403**	**Lime, Fly ash stabalised soil sub-base**	**cum**	**615.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		(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, 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/sq, cm and 25% respectively, all as specified in IRC: 88),as per clause 403.		
4.25	**403**	**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**	**1037.00**
4.26	**403**	**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**	**1901.00**
(ii)		For Base course	**cum**	**1802.00**
4.27		**Sub Base GSB + 2 % RBI Grade-81**		
		Construction of GSB layer on a prepared sub-grade surface using 2% by weight an inorganic pavement material and soil stabilizer RBI Grade-81 by pulverizing, spreading, mixing and compacting by means of 10 to 12 tonnes single drum vibratory roller to achieve the required engineering properties of material at OMC in 75-250 mm. thick layers including all cost of material, labour, HOM of machineries etc. complete as per specifications and EIC directions.	**Cum**	**2250.00**
4.28		**Base Layer + 4 % RBI Grade-81 Aggregate Stabilize**		
		Providing, laying, spreading and compacting Aggregate & Stone Dust conforming to engineering requirements in Base course including in situ mixing of 25% 20 mm down aggregate + 25% 10 mm down	**Cum**	**4747.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		aggregate +50% Stone Dust with 4% inorganic compound RBI Grade-81(a soil stabilizer cum pavement material provided by Alchemist Technology Ltd. or renowned manufacturer), spreading in uniform layers with motor grader on a prepared base including watering and compacting with 10 to 12 tonne single drum vibratory roller to achieve the required density at OMC for preparing the Base Layer Including all cost of materials, labour, HOM of machinery, etc complete as per specifications and EIC directions.		

CHAPTER- 5
BASES AND SURFACE COURSES (BITUMINOUS)

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
5.01	**502 & 112**	**Prime coat**		
A		**Prime Coat over WMM/WBM** (Providing and applying primer coat with bitumen emulsion or cutback bitumen on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.85 kg/sqm using mechanical means as per clause 502 & 112)		
(i)		with bitumen emulsion (SS-1, grade confirming to IS:8887) @0.85 kg/sqm	**sqm**	**67.00**
(ii)		with cutback bitumen (MC 30, grade confirming to IS:217) @ 0.75 kg/sqm	**sqm**	**65.00**
B	**502 & 112**	**Prime Coat over Stabilized soil bases/Crusher Run Macadam** (Providing and applying primer coat with bitumen emulsion or cutback bitumen on prepared surface of granular Base including clearing of road surface and spraying primer using mechanical means as per clause 502 & 112)		
(i)		with bitumen emulsion (SS-1, grade confirming to IS:8887) @1.05 kg/sqm	**sqm**	**82.00**
(ii)		with cutback bitumen (MC 70, grade confirming to IS:217) @ 1.05 kg/sqm	**sqm**	**90.00**
5.02	**503 & 112**	**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 surface cleaned with mechanical broom) as per clause 503 & 112.		
(i)		on Bituminous surfaces @ 0.25 kg per sqm	**sqm**	**20.00**
(ii)		**on Granular surfaces treated with primer @** 0.30 kg per sqm	**sqm**	**22.00**
(iii)		**on Cement concrete pavement** @ 0.35 kg per sqm	**sqm**	**26.00**
5.03	**504**	**Bituminous Macadam** (Providing and laying bituminous macadam with 120- 200 TPH higher capacity Batch Type Hot Mix Plant using crushed aggregates of specified grading premixed with bituminous binder VG-40, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) as per clause 504 & 112**.**		
		With sensor paver finisher		
(i)		for Grading-I (40 mm nominal maximum size, bitumen content minimum 3.30%)	**cum**	**6648.00**
(ii)		for Grading-II (19 mm nominal maximum size, bitumen content minimum 3.40%)	**cum**	**6900.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
5.04	**505**	**Dense Graded Bituminous Macadam** (Providing and laying dense graded bituminous macadam with 120 -200 TPH higher capacity Batch Type HMP using crushed aggregates of specified grading, premixed with bituminous binder VG-40 by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 505 & 112 complete in all respects)		
		With sensor paver finisher		
(i)		**for Grading I** (37.5 mm nominal size, bitumen content minimum 4.0%)	**cum**	**8266.00**
(ii)		**for Grading II** (26.5 mm nominal size bitumen content minimum 4.50%)	**cum**	**9101.00**
5.05	**507**	**Bituminous Concrete** (Providing and laying bituminous concretewith120 -200 TPH higher capacity Batch Type Hot Mix Plant using crushed aggregates of specified grading, premixed with bituminous binder VG-40 and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 & 112 complete in all respects)		
		With sensor paver finisher		
(i)		**for Grading-I** (19 mm nominal size) with bitumen minimum 5.2 %	**cum**	**10423.00**
(ii)		**for Grading-II** (13.2 mm nominal size) with bitumen minimum 5.4 %	**cum**	**10681.00**
5.06	**509**	**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 VG-40 laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller) as per clause 509 & 112.		
Case-I		19 mm nominal chipping size with bitumen @ 1.2 kg/m2	**sqm**	**109.00**
Case-II		13 mm nominal size chipping with bitumen @ 1.0 kg/m2	**sqm**	**84.00**
5.07	**510**	**Open - Graded Premix Surfacing** (Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen VG-40 or cut-back or emulsion to required line, grade	**sqm**	**134.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant HMP of 120 -200 TPH capacity, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades.) as per clause 510 & 112.		
5.08	**508**	**Close Graded Premix Surfacing/Mixed Seal Surfacing** (Mechanical means using HMP of 120 - 200 TPH capacity . Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness using viscocity grade bitumen VG-40 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 and finishing to required level and grade.) as per clause 508 & 112.		
		With sensor paver finisher		
(i)		Type A (11.2 mm to 0.09 mm size aggregates)	**sqm**	**182.00**
(ii)		Type B (13.2 mm to 0.09 mm size aggregates)	**sqm**	**162.00**
5.09	**511**	**Seal Coat** (Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats) as per clause 511 & 112.		
(i)		**Case-I : Type A**	**sqm**	**82.00**
(ii)		**Case-II: Type B** (Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen VG-40)	**sqm**	**54.00**
5.10	**516**	**Mastic Asphalt** (Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen VG-40 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 13.2 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 degree celcius, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 516 & 112)	**sqm**	**747.00**
5.11	**512**	**Slurry Seal** Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface), as per clause 512 & 112.		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(i)		Type-III (Thickness 6 - 8 mm)	sqm	104.00
(ii)		Type-II (Thickness 4 - 6 mm)	sqm	73.00
(iii)		Type-I (Thickness 2 - 3 mm)	sqm	45.00
5.12	519	**Recycling of Bituminous Pavement with Central Recycling Plant** (Recycling pavement by cold milling of exiting bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 % 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 with sensor paver finisher and compacting to the required grade, level and thickness, all as specified in clause 519 & 112)	cum	7276.00
5.13	513	**Fog Spray** (Providing and applying low viscosity bitumen emulsion SS-1 grade confirming to IS-8887 for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing.) as per clause 513 & 112.	sqm	59.00
		Add extra, if blinded with grit of 3 mm size & under coated with 2% of the emulsion by weight.	sqm	6.70
5.14	518	**Bituminous Cold Mix** (Including Gravel Emulsion) (Providing, laying and rolling of bituminous cold mix on prepared base consisting of a mixture of unheated mineral aggregate and emulsified or cutback bitumen, including mixing in a plant of suitable type and 120-200 TPH capacity, transporting, laying, compacting and finishing to specified grades and levels.), as per clause 518 & 112.		
(i)		Using bitumen emulsion and 9.5 mm or 13.2 mm nominal size aggregate	cum	15706.00
(ii)		Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate	cum	15799.00
(iii)		Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate	cum	14503.00
(iv)		Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate	cum	14738.00
5.15	506	**Sand Asphalt Base Course** (Providing, laying and rolling sand-asphalt base course composed of sand, mineral filler and bituminous binder on a prepared sub-grade or sub-base to the lines, levels, grades and cross sections as per the drawings including mixing in a plant of suitable type and 120 - 200 TPH capacity, transporting, laying, compacting and finishing), as per clause 506 & 112.	cum	9450.00
5.16	902	**Crack Prevention Courses**		
(i)		**Stress Absorbing Membrane (SAM) crack width**	sqm	76.00

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		less than 6 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width below 6 mm after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53, sprayed at the rate of 9 kg per 10 sqm and spreading 5.6 mm crushed stone aggregates @ 0.11 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902)		
(ii)		**Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm** (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53,, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	**sqm**	**89.00**
(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 complying with IRC:SP: 53,, sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	**sqm**	**119.00**
(iv)		**Case - IV : Bitumen Impregnated Geotextile** (Providing and laying a bitumen impregnated geotextile layer after cleaning the road surface, geotextile conforming to requirements of clause 708.2, laid over a tack coat with 1.05 kg per sqm of paving grade bitumen 80 - 100 penetration and constructed to the requirement of clause 708.3.4)	**sqm**	**338.00**
5.17	**518.3**	**Recipe Cold Mix** (Providing and laying of premix of crushed stone aggregates and slow/ medium setting emulsion binder conforming to IS:8887 mixed in a batch type cold mixing plant with 120-200 TPH capacity, laid over prepared surface, by paver finisher, rolled with a pneumatic tyred roller initially and finished with a smooth steel wheel roller, all as per clause 518.3 & 112)		
(i)		**75 mm thickness**	**cum**	**8795.00**
(ii)		**40 mm thickness**	**cum**	**12105.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(iii)		**25 mm thickness**	**cum**	**14220.00**
5.18	**507**	**Bituminous Concrete with waste plastic** (Providing and laying bituminous concrete using waste plastic with 120- 200 TPH higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with **bituminous binder VG-40** and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 & 112 complete in all respects)		
		With sensor paver finisher		
(i)		**for Grading-I** (19 mm nominal size) with bitumen @ minimum 4.8 % of mix & waste plastic @ 8 % of bitumen	**cum**	**10003.00**
(ii)		**for Grading-II** (13.2 mm nominal size) with bitumen @ minimum 5.0 % of mix & waste plastic @ 8 % of bitumen	**cum**	**10242.00**
5.19		**Milling of existing bituminous surface depth of bituminous layer upto 50mm** without disturbing the base including all levelling, slope sensors, water tanker, cleaning the road surface and road safety provisions etc complete.		
a)		Self loading of milled material by discharge conveyor onto transport vehicle i.e. without transportation	**Sqm**	**83.00**
b)		disposal of removal material with all lift and lead upto 10 km, stacking / unloading on place as per the directions of Engineer in charge of the work.	**Sqm**	**105.00**
5.20		**Milling of existing bituminous surface depth of bituminous layer upto 100mm** including all levelling, slope sensors, water tanker, cleaning the road surface and road safety provisions etc complete.		
a)		self loading of milled material by discharge conveyor onto transport vehicle i.e. without transportation	**Sqm**	**95.00**
b)		disposal of removal material with all lift and lead upto 10 km, stacking / unloading on place as per the directions of Engineer in charge of the work.	**sqm**	**150.00**
5.21		**Reconditioned Bituminous Macadam** (Providing and laying bituminous macadam as per clause 504 with mixed prepared in minimum 40-60 TPH capacity batch type hot mix plant using crushed aggregates of specified grading premixed with bituminous binder. VG-40 bitumen by weight of **mix using reconditioned milling material 30%** transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		alignment and rolled to achieve the desired compaction)		
A		**With sensor paver finisher**		
(i)		**for Grading-I** (40 mm nominal maximum size, bitumen content minimum 3.30%)	**Cum**	**7200.00**
(ii)		**for Grading-II** (19 mm nominal maximum size, bitumen content minimum 3.40%)	**Cum**	**7440.00**
5.22		**Reconditioned 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. VG-40 bitumen by weight of mix **using reconditioned milling material 30%,** 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.)		
A		**With sensor paver finisher**		
(i)		(i) for Grading-I (37.5 mm nominal size, bitumen content minimum 4.0%)	**Cum**	**8640.00**
(ii)		(ii)for Grading-II (26.5 mm nominal size bitumen content minimum 4.50%)	**Cum**	**9360.00**

CHAPTER- 6
CEMENT CONCRETE PAVEMENTS

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
6.01	601	**Dry Lean Cement Concrete Sub- base** (Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.), as per clause 601 & 112.	**cum**	**3036.00**
6.02	602	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing), as per clause 602 & 112.	**cum**	**6890.00**
6.03		**Construction of Base/Sub-base of pavement with lean concrete - fly ash.** (Construction of Base/sub-base using cement, sand, fly ash and coarse aggregates proportioned as per table 4 of IRC: 74/1979 and with water content ratio, slump and compressive strength as defined in the said table, mix prepared in a batching and mixing plant and compacted with a vibratory roller 8-10 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**	**2890.00**
6.04		**Cement - Fly ash concrete pavement.** (Construction reinforced-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub	**cum**	**6476.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		base with 43 grade cement, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, replacing cement by fly ash to the extent of 15% and sand by 10%, 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)		

CHAPTER- 7
GEOSYNTHETICS AND REINFORCED EARTH

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
7.01	702	**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)	metre	1279.00
7.02	708	**Laying Paving Fabric Beneath a Pavement Overlay** (Providing and laying paving fabric with physical requirements as per Table 700-16 over a tack coat of paving grade Bitumen 80-100 penetration, laid at the rate of 1 kg per sqm over thoroughly cleaned and repaired surface to provide a water resistant membrane and crack retarding layer. Paving fabric to be free of wrinkling and folding and to be laid before cooling of tack coat, brooming and rolling of surface with pneumatic roller to maximise paving fabric contact with pavement surface)	sqm	228.00
7.03	703	**Laying Boulder Apron in Crates of Synthetic Geogrids** (Providing, preparing and laying of geogrid crated apron 1 m x 5 m, 600 mm thick including excavation and backfilling with baffles at 1 metre interval, made with geogrids having characteristics as per clause 703.2, joining sides with connectors/ring staples, top corners to be tie tensioned, placing of suitable cross interval ties in layers of 300 mm connecting opposite side with lateral braces and tied with polymer braids to avoid bulging, constructed as per clause 703.3. filled with stone with minimum size of 200 mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundation recess in case of sloping ground and laid over a layer of geotextile to prevent migration of fines, all as per clause 703 and laid as per clause 2503.3 and approved design.)	cum	1763.00
7.04	3100	**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) Earthfill with granular material which is to be retained by the wall.), as per clause 3100.		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(i)	**3103**	**Assembling, joining and laying of reinforcing elements.**		
A		**With reinforcing element of steel / Aluminium strips / polymeric strips.**		
Type- 1		1.Galvanised carbon steel strips	**metre**	**537.00**
Type- 2		2.Copper Strips	**metre**	**397.00**
Type- 3		3.Aluminium Strips	**metre**	**301.00**
Type- 4		4.Stainless steel strips	**metre**	**478.00**
Type-5		5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips	**metre**	**611.00**
B		**With reinforcing elements of synthetic geogrids**	**sqm**	**386.00**
(ii)	3105	Facing elements of RCC	**sqm**	**1479.00**
		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 in the cost estimate.		
7.05	**703**	**Bi-axial extruded high modulus polypropylene geogrid**		
(i)	**703**	Supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 15kN/m in the longitudinal and transverse direction, with 5kN/m and 7kN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction, junction efficiency not less than 95% and with 38mm X 38mm mesh opening.	**sqm**	**137.00**
(ii)	**703**	Supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 20kN/m in the longitudinal and transverse direction, with 7kN/m and 14kN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction, junction efficiency not less than 95% and with 38mm X 38mm mesh opening.	**sqm**	**156.00**
(iii)	**703**	Supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 30kN/m in the longitudinal and transverse direction, with 10.5kN/m and 21kN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction, junction efficiency not less than 95% and with 38mm X 38mm mesh opening.	**sqm**	**250.00**
(iv)	**703**	Supplying & laying of bi-axial extruded high modulus polypropylene geogrid coforming to MORT&H specification for base/sub-base reinforcement having	**sqm**	**361.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		minimum tensile strength 40kN/m in the longitudinal and transverse direction, with 14kN/m and 28kN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction, junction efficiency not less than 95% and with 38mm X 38mm mesh opening.		
7.06	**703**	**Supplying and laying high strength flexible geogrids (HSFG)** as soil reinforcement / basal reinforcement as per MORTH 3100 and IRC 113, made of high tenacity polyester core with polyethylene coating with minimum Long Term Design Strength (LTDS) of more than 50% of ultimate tensile strength at 30 degree Celcius corresponding to 12 % strain etc. complete and as directed by Engineer - In - Charge.		
(i)		Synthetic Geogrid Ultimate tensile strength- 100 kN/m	**sqm**	**280.00**
(ii)		Synthetic Geogrid Ultimate tensile strength- 150 kN/m	**sqm**	**307.00**
(iii)		Synthetic Geogrid Ultimate tensile strength- 200 kN/m	**sqm**	**415.00**
(iv)		Synthetic Geogrid Ultimate tensile strength- 250 kN/m	**sqm**	**455.00**
(v)		Synthetic Geogrid Ultimate tensile strength- 300 kN/m	**sqm**	**483.00**
(vi)		Synthetic Geogrid Ultimate tensile strength- 350 kN/m	**sqm**	**537.00**
(vii)		Synthetic Geogrid Ultimate tensile strength- 400 kN/m	**sqm**	**578.00**
(viii)		Synthetic Geogrid Ultimate tensile strength- 500 kN/m	**sqm**	**686.00**
(ix)		Synthetic Geogrid Ultimate tensile strength- 600 kN/m	**sqm**	**754.00**
(x)		Synthetic Geogrid Ultimate tensile strength- 800 kN/m	**sqm**	**968.00**
(xi)		Synthetic Geogrid Ultimate tensile strength- 900 kN/m	**sqm**	**1148.00**
(xii)		Synthetic Geogrid Ultimate tensile strength- 1000 kN/m	**sqm**	**1296.00**
(xiii)		Synthetic Geogrid Ultimate tensile strength- 1100 kN/m	**sqm**	**1364.00**
(xiv)		Synthetic Geogrid Ultimate tensile strength- 1200 kN/m	**sqm**	**1483.00**
7.07	**704**	**Supplying & laying of drainage composite for use behind walls, between two different fills,** alongside drains of road, below concrete lining of canals etc. Geocomposite for planar drainage, realized by thermobonding a draining core in extruded monofilaments with two filtering nonwoven	**sqm**	**692.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		geotextiles that may also be working as separation or protecting layers. The draining three dimensional core will have a "W" configuration as longitudinal parallel channels. Minimum thickness to be 7.2mm, with two filtering UV stabilized polypropylene nonwoven geotextile of minimum thickness of 0.75 mm having pores of 150 micron and tensile strength of 8.0 kN/m that will be working as separation or protecting layer, geocomposite having in plane flow capacity of 2.1 L / (m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 18 kN/m , with mass per unit area of 740 gsm, supplied in the form of roll for easy transportation to site of work as per detailed specification all complete as per directions of Engineer in charge.		
7.08	**704**	**Supplying & laying of drainage composite for use behind walls, between two different fills,** alongside drains of road, below concrete lining of canals etc. Geocomposite for planar drainage, realized by thermobonding a draining core in extruded monofilaments with two filtering nonwoven geotextiles that may also be working as separation or protecting layers. The draining three dimensional core will have a "W" configuration as longitudinal parallel channels. Minimum thickness to be 7.2mm, with two filtering UV stabilized polypropylene nonwoven geotextile of minimum thickness of 0.75 mm having pores of 150 micron and tensile strength of 8.0 kN/m that will be working as separation or protecting layer, geocomposite having in plane flow capacity of 2.1 L / (m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 18 kN/m , with mass per unit area of 740 gsm, supplied in the form of roll for easy transportation to site of work as per detailed specification all complete as per directions of Engineer in charge.	**sqm**	**822.00**
7.09	**702**	**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**	**995.00**

CHAPTER- 8
TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
8.01	**409**	**Cast in Situ Cement Concrete M20 kerb** (Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, including transportation of concrete through transit mixer etc. complete)		
A		**Using Concrete Batching and Mixing Plant**		
(i)		PCC M15 for Kerb base	**metre**	**159.00**
(ii)		PCC M20 for Kerb (Cast in Situ)	**metre**	**199.00**
8.02	**409**	**Cast in Situ Cement Concrete M 20 Kerb with Channel** (Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, including transportation of concrete through transit mixer etc. complete)		
A		**Using Concrete Batching and Mixing Plant**		
(i)		PCC M15 for Kerb base	**metre**	**373.00**
(ii)		PCC M20 for Kerb (Cast in Situ)	**metre**	**382.00**
8.03	**801**	**Printing new letter and figures of any shade** (Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade)		
(i)		**Hindi** (Matras commas and the like not to be measured and paid for Half letter shall be counted as half)	**per cm height per letter**	**1.10**
(ii)		**English and Roman**	**per cm height per letter**	**0.70**
8.04	**801**	**Retro- reflectorised Traffic signs** (Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of retro-reflective type sheeting and vide clause 801.3, 2mm thick aluminium sheeting, 3mm/4mm thick Aluminum composite material sheet depending on the size of the sign fixed over back support frame of min 40 x 40 x 5mm Angle mounted on a mild steel circular pipe 65 NB ,3.2 mm thicknness firmly fixed to the ground		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		by means of properly designed foundation with M 15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing and painting all components of the signs and supports as per clause 7.2 of IRC:67)		
		Made of Class-C Micro Prismatic Grade Sheeting of Type-XI (for National Highways and State Highways)		
(i)		120 cm equilateral triangle	**each**	**9472.00**
(ii)		90 cm equilateral triangle	**each**	**6364.00**
(iii)		75 cm equilateral triangle	**each**	**5142.00**
(iv)		60 cm equilateral triangle	**each**	**4143.00**
(v)		120 cm circular	**each**	**15255.00**
(vi)		90 cm circular	**each**	**9616.00**
(vii)		75cm circular	**each**	**7401.00**
(viii)		60 cm circular	**each**	**5589.00**
(ix)		75 cm x 90 cm rectangular (single chevron etc.)	**each**	**10059.00**
(x)		80 mm x 60 mm rectangular	**each**	**7837.00**
(xi)		50 cm x 60 cm rectangular (single chevron etc.)	**each**	**5785.00**
(xii)		60 cm x 45 cm rectangular	**each**	**5444.00**
(xiii)		60 cm x 60 cm square	**each**	**6469.00**
(xiv)		120 cm high octagon	**each**	**15961.00**
(xv)		90 cm high octagon	**each**	**10014.00**
(xvi)		75 cm high octagon	**each**	**7677.00**
(xvii)		75 cm x 90 cm rectangular (single chevron with double plate in singe post)	**each**	**17751.00**
(xviii)		50 cm x 60 cm rectangular (single chevron with double plate in singe post)	**each**	**9204.00**
(xix)		230 cm x 60 cm rectangular (triple chevron with double post)	**each**	**17090.00**
(xx)		155 cm x 60 cm rectangular (double chevron with double post)	**each**	**12884.00**
8.05	**801**	**Direction and Place Identification signs upto 0.9 sqm size board.** (Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of retro reflective type sheeting and vide clause 801.3, fixed over aluminium sheeting, 2 mm thick or Aluminum composite material sheet with overall thickness of 4mm with area not exceeding 0.9 sqm and fixed over back support frame of min 35 x 35 x 3mm Angle mounted on a mild steel circular pipe 65 NB, firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing)		
A		Made of Class-C Micro Prismatic Grade Sheeting of Type-XI (for National Highways and State Highways)	**Sqm.**	**14901.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
B		Made of Class-B High Intensity Micro Prismatic Grade Sheeting of Type IV (for MDR)	**Sqm.**	**10742.00**
C		Made of Class-A High Intensity Micro Prismatic Grade Sheeting of Type I (for ODR & Village Roads)	**Sqm.**	**8375.00**
8.06	**801**	**Direction and Place Identification signs with size more than 0.9 sqm size board.** (Providing and erecting direction and place identification retro-reflectorised sign asper IRC :67 made of retro-reflective type sheeting and vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm fixed over back support frame of min 35 x 35 x 3mm Angle mounted on a mild steel circular pipe 65 NB firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete45 cm x 45 cm x 60 cm, 60 cm 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.**	**15537.00**
B		Made of Class-B High Intensity Micro Prismatic Grade Sheeting of Type IV (for MDR)	**Sqm.**	**11378.00**
C		Made of Class-A High Intensity Micro Prismatic Grade Sheeting of Type I (for ODR & Village Roads)	**Sqm.**	**9011.00**
8.07	**802**	**Overhead Signs** Providing and erecting overhead signs with a corrosion resistant 2mm thick aluminium alloy sheet retro-reflectorised 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 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans & as per IRC :67		
A		Truss and Vertical Support	**tonne**	**103245.00**
B		Aluminium alloy plate for over head sign	**sqm**	**11534.00**
8.08	**803**	**Painting on Concrete Surfaces**		
A		**Two Coats on New Concrete Surfaces** (Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces)	**sqm**	**101.00**
B		**One Coat on Old Concrete Surfaces** (Painting one coat after filling the surface with synthetic enamel paint in all shades on old plastered concrete surfaces)	**sqm**	**82.00**
8.09	**803**	**Painting on Steel Surfaces** (Providing and applying two coats of ready mix paint of approved brand on steel surface after through cleaning of surface to give an even shade)	**sqm**	**76.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
8.10	803	**Painting on Wood Surfaces** (Providing and applying two coats of ready mix paint of approved brand on wood surface after through cleaning of surface to give an even shade)	sqm	81.00
8.11	803	**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	163.00
(ii)		**Up to 10 cm in width**	sqm	142.00
8.12	803	**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	112.00
(ii)		**Up to 10 cm in width**	sqm	121.00
8.13	803	**Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface** (Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.)	sqm	713.00
8.14	804	**Kilo Metre Stone** (Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc)		
(i)		**5th kilometre stone (precast)**	each	4325.00
(ii)		**Ordinary Kilometer stone (Precast)**	each	2510.00
(iii)		**Hectometer stone (Precast)**	each	740.00
8.15	807	**Boundary pillar** (Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting)	each	601.00
8.16	808	**G.I Barbed wire Fencing 1.2 metre high** (Providing and fixing 1.2 metres high GI barbed wire fencing with 1.8 m angle iron posts 40 mm x 40 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end	metre	372.00

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		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)		
8.17	**808**	**G.I Barbed wire Fencing 1.8 metre high** (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be 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)	**metre**	**592.00**
8.18	**808**	**Fencing with welded steel wire Fabric 75 mm x 50 mm (Suggestive)** (Providing 1.20 metre high fencing with angle iron posts 50 mm x 50 mm x 6 mm at 3 metre center to center with 0.40 metre embedded in M15 grade cement concrete, corner, end and every 10th post to be strutted, provided with welded steel wire fabric of 75 mm x 50 mm mesh or 75 mm x 25 mm mesh and fixed to iron posts by flat iron 50 x 5 mm and bolts etc. complete in all respects.)	**metre**	**2403.00**
8.19	**808**	**Tubular Steel Railing on Medium Weight steel channel (ISMC series) 100 mm x 50 mm** (Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 metres high above ground, 2 m centre to centre, complete as per approved drawings)	**metre**	**1931.00**
8.20	**808**	**Tubular Steel Railing on Precast RCC posts, 1.2 m high above ground level** (Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts1.8 metres high (1.2 m above GL and 0.60m below ground with CC M15 size 60x60x30 cm) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing)	**metre**	**3703.00**
8.21	**811**	**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 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified)		
(i)		**M 25 grade concrete**	**metre**	**3970.00**
8.22	**811**	**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)	**metre**	**4107.00**
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)	**metre**	**5580.00**
8.23	**811.4**	**Flexible Crash Barrier, Wire Rope Safety Barrier** (Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (ISMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M 15 grade cement concrete 450 x 450 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M 15 grade cement concrete foundation 2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 450 inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement	**metre**	**6381.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		concrete.)		
8.24		**Anti - Glare Devices in Median**		
A		**Anti - Glare Screen with 25 mm steel pipe framework fixed with circular and rectangular vans** (Providing and erecting an anti - glare screen with 25 mm dia vertical pipes fabricated and framed in the form of panels of one metre length and 1.75 mtr height fixed with circular vane 250 mm dia at top and rectangular vane 600 x 300 mm at the middle, made out of steel sheet of 3 mm thickness, end vertical pipes of the panel made larger for embedding in foundation concrete, applying 2 coats of paint on all exposed surfaces, all as per approved design and drawings.)	**metre**	**7034.00**
B		**Anti - Glare Screen with Rectangular Vane of MS sheet** (Providing and erecting anti - glare screen with rectangular vanes of size 750 x 500 mm made from MS sheet, 3 mm thick and fixed on MS angle 50 x 50 x 6 mm at an angle of 450 to the direction of flow of traffic, 1.5 m center to center, top edge of the screen 1.75 m above ground level, vertical post firmly embedded in cement concrete foundation 0.60 m below ground level, applying 2 coats of paint on exposed faces, all complete as per approved design and drawings)	**metre**	**1048.00**
8.25		**Street Lighting** (Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 9 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with Sodium vapour lamp/LED lamp and fixed firmly in concrete foundation M-15, providing 2 coats of alluminium paint over steel pole etc. complete.)		
(i)		**For Fixing in Median (double arms and double lamps on single pole)**	**each**	**91733.00**
(ii)		**For fixing in Footpath (single arm and single lamp on single pole)**	**each**	**91655.00**
8.26		**Lighting on Bridges (**Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete M-20 or by MS clamping on outer side of RCC crash barrier/parapet, 20 m apart and fitted with 70 watt sodium vapour lamp / LED lamp, providing 2 coats of alluminium paint over steel pole etc. complete).	**each**	
(i)		**Double arms and double lamps on single pole, height of service lane arm variable**	**each**	**64313.00**
(ii)		**Single arm and single lamp on single pole**	**each**	**53981.00**
8.27		**Cable Duct Across the Road** (Providing and laying		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		of a reinforced cement concrete pipe duct, 300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills, constructing head walls at both ends, providing a minimum fill of granular material over top and sides of RCC pipe as per IRC:98, bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 and approved drawings.)		
(i)		**Single Row for one utility service**	**metre**	**6456.00**
(ii)		**Double Row for two utility services**	**metre**	**12802.00**
(iii)		**Triple Row for three utility services**	**metre**	**18877.00**
8.28	**802**	**Gantry Mounted Variable Message Sign board** (Providing and erecting gantry mounted variable message sign board electronically operated capable of flashing the desired message over a designed support system of aluminium alloy or galvanised steel, erected as per approved design and drawings and with lateral clearance as per clause 802, excluding electronic display)	**tonne**	**103057.00**
8.29		**Traffic Impact Attenuators at Abutments and Piers**		
A		**With Scrap Tyres** (Provision and installation of traffic attenuators at abutment/pier of flyovers bridges using scrap tyres of size 100 x 20 retrieved from trucks laid in 2 rows and 4 tiers, one above the other and tied with 20 mm wire rope as per approved design and drawings.)	**sqm**	**4934.00**
B		**Using Plastic/Steel Barrel, Filled with Sand** (Provision and installation of traffic impact attenuator at abutment/pier of flyovers bridges using plastic/steel barrels 0.60 m dia and 1.0 m in height, filled with sand in three rows and tied with20 mm steel wire rope as per approved design and drawings)	**sqm**	**1496.00**
C		**With HI - DRO cell Sandwich (Patented)** ((In this patented HI - DRO cell system, water gets discharged from plastic tubes on impact over a pre-determined time, thus absorbing the energy))	**sqm**	**5576.00**
8.30		**Traffic Cone** (Provision of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS 873)	**each**	**929.00**
8.31		**Rumble Strips (**Provision of numbers of rumble	**sqm**	**410.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface)		
8.32		**Policeman Umbrella** (Provision of a 2 m high (floor to roof) umbrella for traffic policeman at road crossings, where necessary, installed on a raised platform, built on a central support of a steel pipe 100 mm dia, roof made of 25 mm dia steel pipe to provide covered area of 3 sqm, roofed with CGI sheets, all steel parts to be given 2 coats of paint)	**each**	**8705.00**
8.33		**Portable Barricade in Construction Zone** (Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 450, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001)	**each**	**3485.00**
8.34		**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 of450, complete as per IRC:SP:55-2001)	**each**	**5395.00**
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 striups, 150 mm in width at an angle of450, complete as per IRC:SP:55-2001)	**each**	**2392.00**
C		**With Bricks** (Construction of a permanent type barricade made with brick work in mud mortar, 1.5 m high, 4 m long, 600 mm thick, plastered with cement mortar 1:6, painted with yellow and white strips)	**each**	**14845.00**
8.35		**Drum Delineator in Construction Zone** (Provision of metal drum/empty bitumen drum delineator, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferential strips of alternate black and white 100 mm wide fitted with reflectors 3 Nos of 7.5 cm dia, all as per IRC:SP:55-2001)	**each**	**642.00**
8.36		**Water Filled Barricades Work zone sheeting**	**each**	**4072.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		(Providing water filled barricades made up of LDPE to segregate the vehicular movement and workzone as per IRC SP 55 shall be in Trapezoidal Shape 800 mm to 1000 mm in length, 700 mm in height for Major Roads and expressway and 500 mm tall for other roads with interlocking arrnagements, To be placed 0.5 m from the edge of the carriageway for expressway and 0.3 m for other roads. It should have reboubdable workzone sheeting as per ASTM D 4956 S2.)		
8.37		**Providing Tubular Marker made up of Polyurethane** used to divide opposing lanes of road users shall be flexible in nature. Tubular maker having minimum height 450 mm shall be having minimum 75 mm Reboundable workzone retroreflective sheeting as per ASTM 4956 S2. Application of Tubular Marker Shall be done as per IRC SP 55.	**each**	**734.00**
8.38		**Providing Tubular Marker made up of Polyurethane** used to divide opposing lanes of road users shall be flexible in nature. Tubular maker having minimum height 700 mm shall be having minimum 75 mm Reboundable workzone retroreflective sheeting as per ASTM 4956 S2. Application of Tubular Marker Shall be done as per IRC SP 55.	**each**	**882.00**
8.39		**Flagman** (Positioning of a smart flagman with a yellow vest and a yellow cap and a red flag 600 x 600 mm securely fastened to a staff 1 m in length for guiding the traffic as per clause 3.5 of IRC:SP:55)	**each**	**667.00**
8.40		**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**	**786.00**
8.41		**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**	**1264.00**
8.42		**Providing and fixing reflective fluorescent tape on old road sign board** by following the procedure recommanded by manufacturer.Tape shall be consist of white or coloured sheeting having smooth outer surface which has the property of retro-reflection over its entire surface.It shall be weather resistant and show colour fastness.It shall be new and unused and shall show no evidance of cracking, scaling, pitting, blisting, edge lifting and shall have negligible	**Sqm.**	**6037.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		shrinkage or expansion including cleaning / scraping and painting of existing board etc. complete. (Guidance on the recommanded application of each class of tape may be taken from IRC-67) MoRTH clause 804.		
8.43		**Fixing in position all type of Cautionary/ Mandatory sign boards** in ground with C C 1:4:8 block of 60cm x 60cm x 75cm size etc. complete as directed including all leads. MoRTH 801	**Sqm.**	**928.00**
8.44		**Providing and fixing of G.I Chain Link Fencing** on available RCC posts or steel posts or frames. Fixed with GI staples, turn buckles etc complete. They shall be firmly secured to the posts such that the whole fencing remains intact. both edge border, mesh size 75mm x 75mm, 3.15mm wire dia, 2.733 kg per meter weight. All confirming to MoRTH clause 808. The chainlink fencing confirm to ASTM F 1553-06.		
		a) fencing any size	**sqm**	**200.00**
		b) fencing height 1.2 m	**metre**	**300.00**
		c) fencing height 1.8 m	**metre**	**400.00**
8.45	**808**	**Providing and fixing of G.I Chain Link Fencing** with pre cast RCC M-20 posts 80 mm x 80 mm placed every 3 meters center to center founded in M15 grade cement concrete size 0.3x0.3x0.6 m, 0.6 meter below ground level. Fixed with GI staples, turn buckles etc complete. They shall be firmly secured to the posts such that the whole fencing remains intact, All confirming to MoRTH clause 808. The chain link fencing confirm to ASTM F 1553-06.		
		a) fencing height 0.9 m & post height 1.2m	**metre**	**400.00**
		b) fencing height 1.2 m & post height 1.8m	**metre**	**530.00**
		c) fencing height 1.8 m & post height 2.4m	**metre**	**650.00**
8.46	**804**	**Providing painting figuring and numbering as per IRC specification complete for**		
(i)		5th kilometer stone	**each**	**496.00**
(ii)		Ordinary Kilometer stone	**each**	**214.00**
(iii)		Hectometer stone	**each**	**30.00**
(iv)		Boundary stone	**each**	**38.00**
8.47		**Providing painting figuring and numbering to culverts upto 6 m** span complete as per IRC specification	**each**	**472.00**
8.48		**Providing painting figuring and numbering to minor bridge up to 30 m** linear waterway complete as per IRC specification.	**each**	**367.00**
8.49		**Providing painting figuring and numbering to major bridge , linear waterway exceeding 30 m** complete as per IRC specification .	**each**	**407.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
8.50		**Providing & Fixing Delineator** made of M.S. Hollow Rectangular Pipe (Conforming to IS: 4923) of cross section 100 mm x 80 mm, thickness 4mm, of 1.10 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 0.9 meter and 0.20 to 0.30 m below ground. 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 45x43x30cms including transportation etc. complete. The construction and placement of the delineator must be as per IRC: 79.	**each**	**1913.00**
8.51		**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**
8.52		**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**
8.53		**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 MOST circular (RW/NH-33023/31/88-DO.iii) confirming to ASTM D4956-01 Type IX and fixing the	**each**	**2520.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		same with bracket made of galvanized steel fixed with 6 Nos. high precision Screws confirming to IS:1364.		
8.54		**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 MORT&H 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**
8.55		**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 MORT&H (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 MoRT&H 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**
8.56		**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**
8.57		**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**	**402.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
8.58		**Construction of boulder / stone masonry wall** 60 cm thick and 80 cm height in mud mortar 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**	**987.00**
		(i) In cement mortar CM 1:6	**RM**	**1283.00**
8.59		**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**	**1572.00**
8.60		**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**
8.61		**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 metre long from the ground level, firmly fixed to the ground by mean of properly designed foundation with M-15 grade cement concrete 60cm x 60cm x 60cm, below ground level.	**Each**	**22500.00**
8.62		**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	**Each**	**3500.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		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.		
8.63		**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 67-2010 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
CULVERTS & BOX CELL

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
9.01	**304**	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)		
I		**Ordinary soil**		
A		**Manual Means**		
(i)		upto 3 m depth	**cum**	**187.00**
(ii)		3 m to 6 m depth	**cum**	**240.00**
(iii)		Above 6 m depth	**cum**	**321.00**
B		**Mechanical Means**		
(i)		Depth upto 3 m	**cum**	**74.00**
(ii)		Depth 3 m to 6 m	**cum**	**82.00**
(iii)		Depth above 6m	**cum**	**91.00**
II		**Ordinary rock (not requiring blasting)**		
A		**Manual Means**		
(i)		Depth upto 3 m	**cum**	**267.00**
B		**Mechanical Means**	**cum**	**726.00**
III		**Hard rock (requiring blasting)**		
A		Manual Means	**cum**	**732.00**
B		Mechanical Means	**cum**	**915.00**
IV		**Hard rock (blasting prohibited)**		
A		Mechanical Means	**cum**	**1196.00**
V		**Marshy soil**		
(i)		**upto 3 m depth**		
A		Manual means	**cum**	**746.00**
B		Mechanical Means	**cum**	**251.00**
VI		**Back Filling in Marshy Foundation Pits**	**cum**	**531.00**
		Note for Item No. 9.01 by manual means can be used on prior approval of CE, NH Zone, PWD, Raipur		
9.02	**304**	**Filling Annular Space Around Footing in Rock** (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per item 9.4.)	**cum**	**4129.00**
9.03	**304**	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	**cum**	**1230.00**
9.04	**2100**	**Plain cement concrete 1:3:6 nominal mix** in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.	**cum**	**4129.00**
9.05	**1300**	**Brick Masonry Work in Cement Mortar 1:3** in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical	**cum**	**6018.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		Specifications.		
9.06		**Cement Mortar**		
A		Cement Mortar 1:3 (1 cement : 3 sand)	**cum**	**4081.00**
B		Cement Mortar1:2 (1cement :2 sand)	**cum**	**4921.00**
C		Cement Mortar1:4 (1cement :4 sand)	**cum**	**3520.00**
D		Cement Mortar1:6 (1cement :6 sand)	**cum**	**3022.00**
9.07	**1400**	**Stone Masonry Work in Cement Mortar 1:3 in** Foundation complete as per Drawing and Technical Specifications.		
A	**1405.4**	Square Rubble Coursed Rubble Masonry (first sort)	**cum**	**4651.00**
B	**1405.3**	Random Rubble Masonry	**cum**	**4700.00**
9.08	**1300 & 2200**	**Brick masonry work in 1:3 in sub-structure** complete excluding pointing and plastering, as per drawing and Technical Specifications	**cum**	**5867.00**
9.09	**1300 & 2200**	**Pointing with cement mortar (1:3)** on brick work in substructure as per Technical Specifications	**Sqm.**	**73.00**
9.10	**1300 & 2200**	**Plastering with cement mortar (1:3)** on brick work in sub-structure as per Technical Specifications	**Sqm.**	**137.00**
9.11	**1400 & 2200**	**Stone masonry work** in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications		
A		Random Rubble Masonry	**cum**	**4765.00**
B		Coursed rubble masonry (first sort)	**cum**	**5050.00**
C		Ashlar masonry (first sort)	**cum**	**6245.00**
9.12	**2900**	**Laying Reinforced Cement Concrete Pipe NP4/prestrssed concrete pipe on first class bedding in single row .** (Laying Reinforced cement concrete pipe NP4/prestrssed concrete pipe for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)		
A		1000 mm dia	**metre**	**10360.00**
B		1200 mm dia	**metre**	**11783.00**
9.13	**2900**	**Laying Reinforced Cement Concrete Pipe NP 4 /prestrssed concrete pipe on first class bedding in double row .** (Laying Reinforced cement concrete pipe NP4 /prestrssed concrete pipe for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)		
A		1000 mm dia	**metre**	**20879.00**
B		1200 mm dia	**metre**	**23737.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
9.14	**1500, 1700 & 2100**	**Plain/Reinforced Cement Concrete** in Open Foundation complete as per Drawing and Technical Specifications.		
A		**PCC Grade M15**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5229.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5547.00**
B		**PCC Grade M20**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5809.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6127.00**
C		**RCC Grade M20**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5838.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6196.00**
D		**PCC Grade M25**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6276.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6594.00**
E		**RCC Grade M25**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6475.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6813.00**
F		**PCC Grade M30**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6321.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6639.00**
G		**RCC Grade M30**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6580.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6918.00**
H		**RCC Grade M35**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6795.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7132.00**
I		**RCC Grade M40**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7182.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7520.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
9.15	**1500, 1700 & 2100**	**Plain/Reinforced Cement Concrete** for wall & slab etc. complete as per Drawing and Technical Specifications.		
A		**RCC Grade M20**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6634.00**
B		**RCC Grade M25**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7358.00**
C		**RCC Grade M30**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7478.00**
D		**RCC Grade M35**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7721.00**
E		**RCC Grade M40**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**8162.00**
9.16	**1600**	**Supplying, Fitting and Placing un-coated HYSD bar** Reinforcement in Foundation complete as per Drawing and Technical Specifications.	**tonne**	**85365.00**
9.17	**2706 & 2200**	**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	**Nos.**	**375.00**
9.18	**2700**	**PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification**		
Case I		**With Batching Plant, Transit Mixer and Concrete Pump**	**cum**	**4755.00**
Case II		**With Batching Plant, Transit Mixer and Manual placing**	**cum**	**5044.00**
9.19	**1500,1600,1700 & 2704**	**Reinforced cement concrete approach slab** with RCC grade M-30 including reinforcement and formwork complete as per standard drawing of MoRTH and Technical specification**.**	**cum**	**10279.00**
9.20	**2705**	**Drainage Spouts** complete as per drawing and Technical specification	**Nos.**	**2553.00**
9.21	**2702**	**Providing and laying Cement concrete wearing coat** M-30 grade including reinforcement complete as per drawing and Technical Specifications	**cum**	**12463.00**
9.22	**800**	**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 sqm.	**Sqm.**	**167.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
9.23	**2605**	**Filler joint**		
(i)		Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.	**Sqm.**	**6096.00**
(ii)		Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.	**Sqm.**	**339.00**
(iii)		Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.	**Sqm.**	**560.00**
(iv)		Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6 per cent bitumen by weight	**Sqm.**	**34.00**
9.24	**710.1.4.of IRC:78 & 2200**	**Back filling behind abutment, wing wall and return wall** complete as per drawing and Technical Specification		
A		Granular material	**cum**	**1181.00**
B		Sandy material	**cum**	**1633.00**
9.25	**710.1.4.of IRC:78 and 2504.2**	**Providing and laying of Filter media** with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.	**cum**	**1622.00**
9.26	**2503**	**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**	**1937.00**
9.27	**2504**	**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**	**1937.00**
9.28	**2504**	**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**	**1864.00**
9.29	**2900**	**Providing 1st class bedding** below pipes with graded sand or other granular materials passing through 5.6 mm sieve as per clause 2904.	**cum**	**1297.00**

CHAPTER- 10
MAINTENANCE OF ROADS

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
10.01	3002	**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) as directed by Engineer-In-Charge	cum	245.00
10.02	3003	**Maintenance of Earthen Shoulder (filling with fresh soil)** (Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.)	sqm	90.00
10.03	3003	**Maintenance of Earth Shoulder (stripping excess soil)** (Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor)as directed by Engineer-In-Charge	sqm	31.00
10.04	3004.2	**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)	sqm	148.00
10.05	3004.2	**Filling Pot- holes and Patch Repairs with - Bituminous concrete, 40mm. (**Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2) as directed by Engineer-In-Charge		
(i)		for grading I Material	sqm	210.00
(ii)		for grading II Material	sqm	235.00
10.06	3004.3.3	**Crack Filling** (Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.) as directed by Engineer-In-Charge	metre	6.00
10.07	3004.4	**Dusting** (Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.)	sqm	1.87

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
10.08 A	(A) 3004.3.2	**Fog Seal** (Providing and applying low viscosity bitumen emulsion SS-1 grade confirming to IS-8887 for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing.) as per clause 513. as directed by Engineer-In-Charge	**sqm**	**59.00**
B	**(B) 3004.3.4**	**Crack Prevention courses.** (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53, sprayed and with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902..) **as directed by Engineer-In-Charge**		
(i)		Stress Absorbing Membrane (SAM) crack width less than 6 mm @ 9 kg per 10 sqm and spreading 5.6 mm crushed stone aggregates @ 0.11 cum per 10 sqm	**sqm**	**76.00**
(ii)		Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm @ 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm	**sqm**	**89.00**
(iii)		Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 % sprayed @ of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm	**sqm**	**119.00**
(iv)		Bitumen Impregnated Geotextile layer conforming to requirements of clause 708.2, laid over a tack coat with 1.05 kg per sqm of paving grade bitumen 80 - 100 penetration and constructed to the requirement of clause 708.3.4)	**sqm**	**338.00**
C	**(C) 3004.5**	**Slurry Seal** Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface), as per clause 512. as directed by Engineer-In-Charge		
(i)		5 mm thickness	**sqm**	**104.00**
(ii)		3 mm thickness	**sqm**	**73.00**
(iii)		1.5 mm thickness	**sqm**	**45.00**
D	**(D) 3004.6**	**Surface Dressing for maintance works.** (Providing and laying surface dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		roller) as per clause 509. as directed by Engineer-In-Charge		
(i)		19 mm nominal chipping size	**sqm**	**109.00**
(ii)		13 mm nominal size chipping	**sqm**	**84.00**
10.09	**3005.1**	**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) as directed by Engineer-In-Charge	**metre**	**658.00**
10.10	**3005.2**	**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) as directed by Engineer-In-Charge	**metre**	**53.00**
10.11	**3000**	**Hill Side Drain Clearance** (Removal of earth from the choked hill side drain and disposing it on the valley side manually) as directed by Engineer-In-Charge	**metre**	**52.00**
10.12	**3000**	**Land Slide Clearance in soil** (Clearance of land slides in soil and ordinary rock by a bull-dozer 175 HP and disposal of the same on the valley side) as directed by Engineer-In-Charge	**cum**	**75.00**
10.13	**3000**	**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.) **as directed by Engineer-In-Charge**	**cum**	**205.00**
10.14	**3000**	**Snow Clearance on Roads with Dozer** (Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side) **as directed by Engineer-In-Charge**	**cum**	**6.00**
10.15	**3000**	**Snow Clearance on Roads with Snow Blowers** (Snow clearance from road surface by a snow blower and disposing on the valley side.) **as directed by Engineer-In-Charge**	**cum**	**7.00**
10.16		**Manual road sweeping and cleaning** by labours including road safety precautions as per clause 112 and personal life & accidental insurance of labours on site. as directed by Engineer-In-Charge		
(i)		For 2-lane carriageway width	**Per Km per month**	**8153.00**
(ii)		For 2-lane + PS carriageway width	**Per Km per month**	**9326.00**
(iii)		For 4-lane carriageway width	**Per Km per month**	**13679.00**
(iv)		For 4-lane + PS carriageway width	**Per Km per month**	**18653.00**
10.17		**Labour for metal patch repairs i**ncluding preparing surface, adding required quantity of	**Square metre**	**82.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		metal, murum, watering, ramming etc complete. Spec.Number: As directed by Engineer- incharge. (excluding cost and of material) as directed by Engineer-In-Charge		
10.18		**The maintenance of earthen drains** include erosion, repair, clearing, cleaning, reshaping, regrading, deepening of side drains as well as catch water drains etc. complete as directed by Engineer-In-Charge	**running meter**	**16.00**
10.19		**Road side RCC drain or earthen drain cleaning/ clearance** through manual labours or with require machinery including removing / placing of drain cover and disposal of waste material upto suitable locations along with transportation charges etc. and as directed by Engineer-In-Charge	**running meter**	**10.00**
10.20		**Maintenance of road signs** by way of cleaning and repainting of mandatory/requlatory/cautionary / informatory and place identifications sign board as per drawings etc. complete as directed by Engineer-In-Charge	**kilometer**	**4412.00**
10.21		**Removing all type of Cautionary/ Mandatory sign boards** with C C block of any size etc. complete as directed including all leads. MoRTH 801 and as directed by Engineer-In-Charge	**number**	**500.00**
10.22		**Refixing of existing all type of Cautionary/ Mandatory sign boards** with C C block of any size etc. complete as directed including all leads. MoRTH 801 and as directed by Engineer-In-Charge	**number**	**500.00**
10.23		**Cutting of branches of trees and shrubs from the road way or within R.O.W** including disposal of wood and leaves to suitable location etc. complete as directed by Engineer-In-Charge	**number**	**229.00**
10.24		**Trimming of grass, shurbs and weeds** from the shoulders/berms and disposing off the same to suitable locations etc. complete as directed by Engineer-In-Charge	**sqm**	**7.00**
10.25		**Dressing of side shoulder/Scrapping the road side shoulder** by Mechanical means (By JCB/DOZER) including excavation of raised side shoulders upto 15cm depth including remooving/cutting bushes, grass and dressing shoulder to desired camber and disposing of excavated stuff up to road boundary etc complete. as directed by Engineer In Charge.	**sqm**	**5.00**

CHAPTER- 11
HORTICULTURE

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
11.01	307	**Spreading of Sludge Farm Yard Manure or/and good Earth** (Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm- yard manure or/and good earth to be paid for separately)	cum	33.00
11.02	307	**Grassing with ' Doobs' Grass** (Grassing with 'Doobs' grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for moving including supplying good earth if needed)		
(i)		In rows 15 cm apart in either direction	sqm	28.00
(ii)		In rows 7.5 cm apart in either direction	sqm	47.00
11.03	307	**Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod** (Making lawns including ploughing and breaking of clod, removal of rubbish, dressing and supplying doobs grass roots and planting at 15 cm apart, including supplying and spreading of farm yard manure at rate of 0.18 cum per 100 sqm)	sqm	37.00
11.04	307	**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	231.00
11.05		**Turfing Lawns with Fine Grassing including Ploughing, Dressing** (Turfing lawns with fine grassing including ploughing, dressing including breaking of clods, removal of rubbish, dressing and supplying doobs grass roots at 10 cm apart, including supplying and spreading of farm yard manure at rate of0.6 cum per 100 sqm)	sqm	43.00
11.06	307	**Maintenance of Lawns** with Fine Grassing for the First Year including watering etc. complete.	sqm	217.00
11.07		**a) Planting Permanent Hedges including Digging of Trenches** (Planting permanent hedges including digging of trenches, 60 cm wide and 45 cm deep, refilling the excavated earth mixed with farmyard manure, supplied at the rate of 4.65 cum per 100 metres and supplying and planting hedge plants at 30 cm apart)	metre	218.00
(b)		**Maintenance of Hedge for one year** including watering with tanker, sludge manuring / farm yard manuring at site, repalcement of casualities of plants & shrubs and using pesticides for pest control, triming and pruning of plants & shrubs etc. complete.	metre	242.00
11.08	307	**a) Planting Flowering Plants and Shrubs in**	km	59962.00

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		Central Verge (Planting flowering plants and shrubs 200 plants and 800 shrubs in two rows in one km length of road in verge, digging pits, mixing farm yard/sludge manure with soil, backfilling the hole and watering, using pesticides for pest control etc. complete).		
(b)		**Maintenance of Flowering Plants and Shrubs in Central Verge** including watering with tanker, sludge manuring / farm yard manuring at site, repalcement of casualities of plants & shrubs and using pesticides for pest control, triming and pruning of plants & shrubs etc. complete and reporting maintenance activities through Monthly Maintenance Report alongwith photographs having watermark of GPS location, date & time**.**		
(i)		For central verge of width 1 m. & above for one year	**km**	**125065.00**
(ii)		For central verge of width 1 m. & above for one month	**km**	**10422.00**
(iii)		For central verge of width less than 1 m. for one year	**sqm**	**125.00**
(iv)		For central verge of width less than 1 m. for one month	**sqm**	**10.00**
11.09	**307**	**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 mannure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year)	**each**	**1313.00**
11.10	**308**	**Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil** (Renovation lawns including, weeding, forking the ground, top dressing with forked soil, watering and maintenance the lawns, for 30 days or more, till the grass forms a thick lawn, free from weeds, and fit for moving and disposal of rubbish as directed, including supplying good earth, if needed but excluding the cost of well decayed farm yard manure)	**sqm**	**21.00**
11.11	**308.2**	**Supply at Site Well Decayed Farm Yard Manure** (Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking)	**cum**	**185.00**
11.12	**308.20**	**Supply at Site of Work/ Store - Deoiled Neem Cake** (Supply at site of work/ store- deoiled neem cake duly packed in used gunny bags)	**quintal**	**31.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
11.13	308.2	**Supplying Sludge** (Supplying sludge duly stacked at site/ store)	cum	142.00
11.14		**Half Brick Circular Tree Guard, in 2nd class Brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground** (Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete)	each	1793.00
11.15		**Edging with 2nd class Bricks,** laid dry lengthwise (Edging with 2nd class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 metres)	metre	36.00
11.16		**Making Tree Guard 53 cm dia and 1.3 m high as per design from empty bitumen drum** (Making tree guard 53 cm dia and 1.3 m high as per design from empty bitumen drum, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets, complete in all respect)	each	565.00
11.17		**Making Tree Guard 53 cm dia and 2 metres high as per design from empty bitumen drums** (Making tree guard 53 cm dia and 2 metres high as per design from empty bitumen drums, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing four legs 40 cm long of 30 x 3 mm MS riveted to tree guard and providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets complete in all respects)	each	1066.00
11.18		**Wrought Iron and Mild Steel Welded Work (Wrought iron and mild steel welded work)** (using angles, square bars, tees and channel grills, grating frames, gates and tree guards of any size and design etc. including cost of screens and welding rods or bolts and nuts complete fixed in position but without the cost of excavation and concrete for fixing which will be paid separately)	quintal	9851.00
11.19		**Tree Guard with MS Iron** (Providing and fixing MS iron tree guard 60 cm dia and 2 metre high above ground level formed of 4 Nos (25 x 6 mm) and 8 Nos (25 x 3 mm) vertical MS riveted to 3 Nos (25 x 6 mm) iron rings in two halves, bolted together with 8 mm dia and 30 mm long bolts including painting	each tree guard	2380.00

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		two coats with paint of approved brand over a coat of priming, complete in all respects.)		
11.20		**Tree Guard with MS Angle Iron and Steel Wire** (Providing and fixing tree guard 0.60 metre square, 2.00 metre high fabricated with MS angle iron 30 x 30 x 3 mm, MS iron 25 x 3 mm at 100 mm centre to centre and steel wire3 mm dia welded and fabricated as per design in two halves bolted together, fixed in ground with PCC M10 of dimensions 150x150x200 mm size etc. complete)	**each tree guard**	**3407.00**
11.21		**Compensatory Afforestation** (Planting trees as compensatory afforestation at the rate of 290 trees per hectare at a spacing of 6 m by grubbing and leveling the ground upto a depth of 150 mm, digging holes 0.9 m dia, 1 m deep, mixing farm yard/sludge manure with soil, planting of sapling 2 m high with 25 cm dia stem, backfilling the hole and watering)	**hectare**	**115820.00**

CHAPTER- 12
SURVEY AND TESTING OF ROAD & TRAFFIC

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
12.01		**Deploying Automated Traffic Count and classification (ATCC)** system on Road in both direction at designated traffic count post by using High Definition Cameras fro 7 days & 7 night (24 hrs x 7 days). Collecting the Non Editable Data In DVR System with necessary electronic and electrical arrangements or inventor of required apacity Classification of data as per vehicle category as required with the help of software and submitting the the reports to the concerned department in hard copies as well as in soft copy, including using necessary technical manpower etc. complete. confirming to clause 6.2 of IRC:SP:19-2001 and Guidance may be taken from IRC:9, etc. complete.	**each location**	**111400.00**
12.02		**Axle load Survey on National Highways**(upto four lane) using Portable electronic weigh bridges for minimum one day(24hrs) including mobilisation, transportation, report preperation and submission in hard and soft copies etc complete. confirming to clause 6.7 of IRC:SP:19-2001 and Guidance may be taken from IRC:9, etc. complete	**each location**	**70800.00**
12.03		**Falling weight Deflectometer (FWD)** Test on National Highways(upto four lane) using Portable electronic weigh bridges for minimum one day(24hrs) including mobilaization, demobilization, transportation, report preperation and submission in hard and soft copies etc complete. confirming to IRC:115-2014, etc. complete		
a)		for new roads (4 points per lane km)	**each point**	**1900.00**
b)		for old roads (8 points per lane km)	**each point**	**2030.00**
12.04		**To carryout linear Drone survey** agencies will usefully autonomous professional survey grade drone and in post process for aerial triangulation required ground control points and benchmarks will be collected by using survey grade dual frequency DGPS-PPK system. After post processing agency will deliver following final output. 1.Geotagged images in JPG format with resolution of 4-5cm/pixel with 70% overlap 2. GCP values in .CSV format. 3. 3D point cloud cover in .las format.	**Running kilometer**	**8500.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		4. digital surface model (DSM) in .tiff format. 5.2D orthorectified images in .tiff format with 5cm resolution which gives capability to capture detailed features. For Linear UAV Survey, etc. complete.		
12.05		**DGPS Survey** (Enumeratation of forest area for diversion under FCA-1980 for Road Project and survey of identified land and Compensatory afforestation land for preparation of FCA Proposal of MoEF & CC including Machineries, logistic of team and overall management of work, Mapping on SOI, Revenue, Toposheet, General of KML & shape files, Preparation of land scheduled, preperation of maps on 1:50000 scale, preparation of DGPS report including printing and stationaries etc., Demarcation of Patch boundary with Pillars as per MoEF&CC Norms including excavation, grouting fixing, painting and marking with DGPS cordinates etc. complete.)		
A		**For Linear survey**		
(i)		For 1 to 10 Hectare Area	**Per Hect.**	**17248.00**
(ii)		For 10 to 30 Hectare Area	**Per Hect.**	**15492.00**
(iii)		For 30 to 49 Hectare Area	**Per Hect.**	**12412.00**
(iv)		For 50 to 70 Hectare Area	**Per Hect.**	**10886.00**
B		**For each individual location**		
(i)		For upto 20 Hecrate Open Land	**Per Hect.**	**6899.00**
(ii)		For upto 40 Hecrate Open Land	**Per Hect.**	**3835.00**
(iii)		For upto 50 Hecrate Open Land	**Per Hect.**	**5192.00**
(iv)		For upto 100 Hecrate Open Land	**Per Hect.**	**3590.00**
12.06		**Diversion of Forest Land under FCA-1980 of MoEF & CC for road project (** preparation of proposal, online registration of proposal, prepartion of 7 copies of 45 points proposal and submission to Nodal Officer Forest Department for approval and recommendation of DFO, CCF & APCCF (Land Management), compliance to State Govt. & FCA Committee Regional Officer of MoEF & CC, compliance of observations while processing of proposal at above mentioned officials department of Central & State Govt. Assistant in deposition of funds and compliance of all quarries upto approval of Stage-I & Stage-II etc. complete)		
(i)		Data collection, preparation of proposal and online registration	**Each**	**259860.00**
(ii)		Submission of 7 set proposal file & submission in Forest Department	**Each**	**259860.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(iii)		Stage-I approval i/c compliances etc. complete	**Each**	**173240.00**
(iv)		Stage-II approval i/c compliances etc. complete	**Each**	**173240.00**
12.07		**Detailed survey of existing road** including chaining, levelling, with cross sections at 25 m intervals and closing survey each day's work, fixing of bench marks, painting, taking trialpits and submission of road cross sections, L-sections , quantity statements and details of all cross drainage works in computerised prints in five copies in proper files and all types of compliance required by the Engineer-in -charge.	**Per Km.**	**14500.00**
12.08		**NSV Survey** of Road & preparation of report as per relevant circular of the MoRTH, etc. complete and submission hard copy & successfully uploading of soft copy in portal of the MoRTH.	**Per lane Km.**	**4500.00**

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)	**CONCRETE**
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)	**STEEL**
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)	**STORAGE OF MATERIALS:** 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)	**MODE OF MEASUREMENTS:** 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. 54800.00 per M.T. (d) High Tensile Steel wires/strands :- Rs. 86000.00 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 (5th 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 (5th 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.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
13.01	**304**	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)		
I		**Ordinary soil**		
A		**Manual Means**		
(i)		upto 3 m depth	**cum**	**187.00**
(ii)		3 m to 6 m depth	**cum**	**240.00**
(iii)		Above 6 m depth	**cum**	**321.00**
B		**Mechanical Means**		
(i)		Depth upto 3 m	**cum**	**74.00**
(ii)		Depth 3 m to 6 m	**cum**	**82.00**
(iii)		Depth above 6m	**cum**	**91.00**
		Add extra 20% in 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)**		
A		**Manual Means**		
(i)		Depth upto 3 m	**cum**	**267.00**
B		**Mechanical Means**		
(i)		Depth upto 3 m	**cum**	**726.00**
(ii)		**Add extra 20%** in rates of above items for dewatering (Assessment of dewatering shall be made as per site condition)		
III		**Hard rock (requiring blasting)**		
(i)		**Manual Means**	**cum**	**926.00**
		Add extra 20% in rates of above items for dewatering (Assessment of dewatering shall be made as per site condition)		
IV		**Hard rock (blasting prohibited)**		
(i)		**Mechanical Means**	**cum**	**998.00**
		Add extra 20% in rates of above items for dewatering (Assessment of dewatering shall be made as per site condition)		
V		**Marshy soil**		
(i)		**upto 3 m depth**		
(a)		**Manual means**	**cum**	**746.00**
(b)		**Mechanical Means**	**cum**	**251.00**
(iii)		Back Filling in Marshy Foundation Pits	**Cum**	**531.00**
		Add extra 20% in rates of above items for		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		dewatering (Assessment of dewatering shall be made as per site condition)		
		Add extra for shoring and shuttering, where needed @ 1 percent on cost of excavation for foundation		
13.02	**304**	**Filling Annular Space Around Footing in Rock** (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per items 13.4.)	**cum**	**4943.00**
13.03	**304**	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	**cum**	**1230.00**
13.04	**2100**	**PCC 1:3:6 in Foundation** (Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.)	**Cum**	**4294.00**
13.05	**1300**	**Brick masonry work** in cement mortar 1:3 in foundation complete excluding pointing and plastering, as per drawing and technical specifications	**cum**	**6018.00**
13.06		**Stone masonry work** in cement mortar 1:3 in foundation complete as drawing and Technical Specification		
(a)		Square Rubble Coursed rubble masonry(first sort)	**cum**	**4651.00**
(b)		Random Rubble Masonry	**cum**	**4700.00**
13.07	**1500, 1700 & 2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications		
A		**PCC Grade M15**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**4943.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5244.00**
B		**PCC Grade M20**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5492.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5793.00**
C		**RCC Grade M20**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5520.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5858.00**
D		**PCC Grade M25**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5933.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6234.00**
E		**RCC Grade M25**		
Case I		With Batching Plant, Transit Mixer and Concrete	**cum**	**6122.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		Pump		
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6441.00**
F		**PCC Grade M30**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5976.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6277.00**
G		**RCC Grade M30**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6221.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6541.00**
H		**RCC Grade M35**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6424.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6743.00**
I		**RCC Grade M40**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6791.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7110.00**
J		**RCC Grade M45**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6939.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7259.00**
13.08	**1200**	**Providing and constructing temporary island** 16 m diameter for construction of well foundation for 8m dia. Well.		
A		Assuming depth of water 1.0 m and height of island to be 1.25m.	**each**	**131778.00**
B		Assuming depth of water 4.0 m and height of island 4.5 m.	**each**	**792226.00**
C		Providing and constructing one span service road to reach island location from one pier location to another pier location	**metre**	**3490.00**
13.09	**1200 & 1900**	**Providing and laying cutting edge of mild steel** weighing 40 kg per metre for well foundation complete as per drawing and technical specification.	**tonne**	**111523.00**
13.10	**1200, 1500 & 1700**	**Plain/Reinforced cement concrete,** in well foundation complete as per drawing and technical specification		
A		**Well curb**		
(i)		**RCC M20 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6228.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6562.00**
(ii)		**RCC M25 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6901.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7236.00**
(iii)		**RCC M30Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7016.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7351.00**
(iv)		**RCC M35 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7250.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7584.00**
(v)		**RCC M40Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7672.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**8007.00**
B		**Well steining**		
(I)		**PCC M15 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5099.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5406.00**
(ii)		**PCC M20 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5679.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5986.00**
(iii)		**RCC M20 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5709.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6016.00**
(iv)		**PCC M25 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6146.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6453.00**
(v)		**RCC M25 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6326.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6633.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(vi)		**PCC M30 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6191.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6498.00**
(vii)		**RCC M30 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6431.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6738.00**
(viii)		**RCC M35 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6645.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6952.00**
(ix)		**RCC M40 Grade**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6452.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7340.00**
C		**Bottom Plug**		
(i)		**PCC Grade M20**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5437.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5753.00**
(ii)		**PCC Grade M25**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5883.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6198.00**
(iii)		**PCC Grade M30**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5926.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6241.00**
(iv)		**PCC Grade M35**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6283.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6599.00**
D		**Intermediate plug**		
(I)		**Grade M20 PCC**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**Cum**	**5437.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5479.00**
(ii)		**Grade M25 PCC**		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5603.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5903.00**
(iii)		**Grade M30 PCC**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5644.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5945.00**
E		**Top plug**		
(i)		**Grade M15 PCC**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**4755.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5044.00**
(ii)		**Grade M20 PCC**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5281.00**
Case II		With Batching Plant, Transit Mixer and Manual placing		**5570.00**
(iii)		**Grade M25 PCC**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5706.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5995.00**
(iv)		**Grade M30 PCC**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5214.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6036.00**
F		**Well cap**		
(i)		**RCC Grade M20**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5520.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5821.00**
(ii)		**RCC Grade M25**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6104.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6404.00**
(iii)		**RCC Grade M30**		
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6203.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6504.00**
(iv)		**RCC Grade M35**		
Case I		With Batching Plant, Transit Mixer and Concrete	**cum**	**6406.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		Pump		
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6706.00**
(v)		**RCC M40 Grade**	**cum**	
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6772.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7073.00**
(vi)		**RCC M45 Grade**	**cum**	
Case I		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6921.00**
Case II		With Batching Plant, Transit Mixer and Manual placing	**cum**	**7222.00**
13.11	**Section 1200**	**Sinking of 6 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.		
A		**Sandy soil**		
(i)		Depth below bed level upto 3.0 M	**metre**	**8671.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**12581.00**
(iii)		Beyond 10m upto 20m	**metre**	**16616.00**
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**831.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**31167.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	**metre**	**37401.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**74049.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	**metre**	**88859.00**
B		**Clayey soil (6m dia. Well)**		
(i)		Depth below bed level upto 3.0 M	**metre**	**12581.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**28793.00**
(iii)		Beyond 10 m upto 20 m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**38027.00**
b		Add for dewatering @ 5% of cost, if required.	**metre**	**39928.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**71328.00**
b		Add 5% of cost for dewatering of the cost, if required	**metre**	**89160.00**
c		Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**85594.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**169467.00**
b		Add 5% of cost for dewatering, if required	**metre**	**211834.00**
c		Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**203361.00**
C		**Soft rock (6m dia well)**		
(i)		Add Extra over item no. 13.11 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**81618.00**
D		**Hard rock (6m dia well)**		
(i)		Add Extra over item no. 13.11 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**68253.00**
E		**Bouldery strata(6m dia well)**		
(i)		Add Extra over item no. 13.11 (A) & (B) irrespective of depth for sinking in rock boulder strata	**metre**	**68072.00**
13.12	**Section 1200**	**Sinking of 7 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.		
A		**Sandy soil**		
(i)		Depth below bed level upto 3.0 M	**metre**	**26497.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**18234.00**
(iii)		Beyond 10m upto 20m		**24081.00**
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**1204.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**45170.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour) .	**metre**	**9034.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**107320.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	**metre**	**21464.00**
B		**Clayey soil (7m dia. Well)**		
(i)		Depth below bed level upto 3.0 M	**metre**	**18234.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**30222.00**
(iii)		Beyond 10 m upto 20 m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**39914.00**
b		Add for dewatering @ 5% of cost, if required.	**metre**	**1996.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**74869.00**
b		Add 5% of cost for dewatering on the cost, if	**metre**	**3744.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		required		
c		Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**18717.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**177878.00**
b		Add 5% of cost for dewatering, if required	**metre**	**8894.00**
c		Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		**202292.00**
C		**Soft rock (7 m dia well)**		
(i)		Add Extra over item no. 13.12 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**109536.00**
D		**Hard rock (7 m dia well)**		
(i)		Add Extra over item no. 13.12(A) & (B) irrespective of depth for sinking in Soft Rock	**Metre**	**90777.00**
E		**Bouldery strata(7 m dia well)**		
(i)		Add Extra over item no. 13.13 (A) & (B) irrespective of depth for sinking in rock bouldery strata	**metre**	**91541.00**
13.13	**Section 1200**	**Sinking of 8 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.		
A		**Sandy soil**		
(i)		Depth below bed level upto 3.0 M	**metre**	**16491.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**20425.00**
(iii)		Beyond 10m upto 20m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**26974.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**50595.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	**metre**	**10119.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**120209.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	**metre**	**144251.00**
B		**Clayey soil (8m dia. Well)**		
(i)		Depth upto 3.0 M	**metre**	**22286.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**31255.00**
(iii)		Beyond 10 m upto 20 m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**41279.00**
b		Add for dewatering @ 5% of cost, if required.	**metre**	**2064.00**
(iv)		**Beyond 20m upto 30 m**		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**77428.00**
b		Add 5% of cost for dewatering on the cost, if required	**metre**	**3872.00**
c		Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**19357.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**183960.00**
b		Add 5% of cost for dewatering, if required	**metre**	**9198.00**
c		Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**36792.00**
C		**Soft rock (8 m dia well)**		
(i)		Add Extra over item no. 13.13 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**141560.00**
D		**Hard rock (8 m dia well)**		
(i)		Add Extra over item no. 13.13 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**110969.00**
E		**Bouldery strata(8 m dia well)**		
(i)		Add Extra over item no. 13.13 (A) & (B) irrespective of depth for sinking in rock bouldery strata	**metre**	**118433.00**
13.14	**Section 1200**	**Sinking of 9 m external diameter well (** other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.		
A		**Sandy soil**		
(i)		Depth below bed level upto 3.0 M	**metre**	**16633.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**22451.00**
(iii)		Beyond 10m upto 20m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**29653.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**55622.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	**metre**	**11124.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**132150.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	**metre**	**26430.00**
B		**Clayey soil (9m dia. Well)**		
(i)		Depth below bed level upto 3.0 M	**metre**	**23441.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**33735.00**
(iii)		Beyond 10 m upto 20 m		
a		Add 5% for every additional meter depth of sinking	**metre**	**44553.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		over the rate of sinking for the previous meter		
b		Add for dewatering @ 5% of cost, if required.	**metre**	**2228.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**83569.00**
b		Add 5% of cost for dewatering on the cost, if required	**metre**	**4178.00**
c		Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**98554.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**198546.00**
b		Add 5% of cost for dewatering, if required	**metre**	**9927.00**
c		Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**39709.00**
C		**Soft rock (9 m dia well)**		
(i)		Add Extra over item no. 13.14 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**177690.00**
D		**Hard rock (9 m dia well)**		
(i)		Add Extra over item no. 13.14(A) & (B) irrespective of depth for sinking in Soft Rock	**Metre**	**143171.00**
E		**Bouldery strata (9 m dia well)**		
(i)		Add Extra over item no. 13.14 (A) & (B) irrespective of depth for sinking in rock bouldery strata	**metre**	**148746.00**
13.15	**Section 1200**	**Sinking of 10 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.		
A		**Sandy soil**		
(i)		Depth below bed level upto 3.0 M	**metre**	**20260.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**23617.00**
(iii)		Beyond 10m upto 20m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**31191.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**58505.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	**metre**	**11701.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**139002.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	**metre**	**27801.00**
B		**Clayey soil (10m dia. Well)**		
(i)		Depth below bed level upto 3.0 M	**metre**	**25405.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(ii)		Beyond 3m upto 10m depth	**metre**	**33025.00**
(iii)		Beyond 10 m upto 20 m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**43617.00**
b		Add for dewatering @ 5% of cost, if required.	**metre**	**2181.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**81815.00**
b		Add 5% of cost for dewatering on the cost, if required	**metre**	**4091.00**
c		Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**20454.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**194382.00**
b		Add 5% of cost for dewatering, if required	**metre**	**9719.00**
c		Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		**38876.00**
C		**Soft rock (10 m dia well)**		
(i)		Add Extra over item no. 13.15 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**217926.00**
D		**Hard rock (10 m dia well)**		
(i)		Add Extra over item no. 13.15 (A) & (B) irrespective of depth for sinking in Soft Rock	**Metre**	**174034.00**
E		**Bouldery strata (10 m dia well)**		
(i)		Add Extra over item no. 13.15 (A) & (B) irrespective of depth for sinking in rock bouldery strata	**metre**	**182481.00**
13.16	**Section 1200**	**Sinking of 11 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.		
A		**Sandy soil**		
(i)		Depth from bed level upto 3.0 M	**metre**	**47284.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**35322.00**
(iii)		Beyond 10m upto 20m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**46648.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**87501.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	**metre**	**17500.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**207890.00**
b		Add 20% of cost for Kentledge including supports,	**metre**	**41578.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		loading arrangement, and Labour etc.		
B		**Clayey soil (11 m dia. Well)**		
(i)		Depth from bed level upto 3.0 M	**metre**	**42221.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**67808.00**
(iii)		Beyond 10 m upto 20 m		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**89552.00**
b		Add for dewatering @ 5% of cost, if required.	**metre**	**4478.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**167977.00**
b		Add 5% of cost for dewatering on the cost, if required	**metre**	**8399.00**
c		Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**198097.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**399090.00**
b		Add 5% of cost for dewatering, if required	**metre**	**19955.00**
c		Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**79818.00**
C		**Soft rock (11 m dia well)**		
(i)		Add Extra over item no. 13.16(A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**262269.00**
D		**Hard rock (11 m dia well)**		
(i)		Add Extra over item no. 13.16 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**208031.00**
E		**Bouldery strata (11 m dia well)**		
(i)		Add Extra over item no. 13.16 (A) & (B) irrespective of depth for sinking in rock bouldery strata	**metre**	**219637.00**
13.17	**Section 1200**	**Sinking of 12 m external diameter well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.		
A		**Sandy soil**		
(i)		Depth below bed level upto 3.0 M	**metre**	**96657.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**107240.00**
(iii)		**Beyond 10m upto 20m**		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**141630.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**265660.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	**metre**	**53132.00**
(v)		**Beyond 30m upto 40 m**		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**631171.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	**metre**	**126234.00**
B		**Clayey soil (12 m dia. Well)**		
(i)		Depth below bed level upto 3.0 M	**metre**	**104135.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**171114.00**
(iii)		**Beyond 10 m upto 20 m**		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**225985.00**
b		Add for dewatering @ 5% of cost, if required.	**metre**	**11299.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**423888.00**
b		Add 5% of cost for dewatering on the cost, if required	**metre**	**21194.00**
c		Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**105972.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**1007097.00**
b		Add 5% of cost for dewatering, if required	**metre**	**50355.00**
c		Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**201419.00**
C		**Soft rock (12 m dia well)**		
(i)		Add Extra over item no. 13.17 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**310717.00**
D		**Hard rock (12 m dia well)**		
(i)		Add Extra over item no. 13.17 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**245163.00**
E		**Bouldery strata (12 m dia well)**		
(i)		Add Extra over item no. 13.17 (A) & (B) irrespective of depth for sinking in rock bouldery strata	**metre**	**260216.00**
13.18	**Section 1200**	**Sinking of Twin D Type well** (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.		
A		**Sandy soil**		
(i)		Depth from bed level upto 3.0 M	**metre**	**22002.00**
(ii)		Beyond 3m upto 10m depth	**metre**	**23657.00**
(iii)		**Beyond 10m upto 20m**		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**31243.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**58604.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
b		Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	**metre**	**11721.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**139234.00**
b		Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	**metre**	**27847.00**
B		**Clayey soil (Twin D Type Well)**		
(i)		**Depth below bed level upto 3.0 M**	**metre**	**25467.00**
(ii)		**Beyond 3m upto 10m depth**	**metre**	**36704.00**
(iii)		**Beyond 10 m upto 20 m**		
a		Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**48473.00**
b		Add for dewatering @ 5% of cost, if required.	**metre**	**2424.00**
(iv)		**Beyond 20m upto 30 m**		
a		Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**90922.00**
b		Add 5% of cost for dewatering on the cost, if required	**metre**	**4546.00**
c		Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**22731.00**
(v)		**Beyond 30m upto 40 m**		
a		Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter	**metre**	**216019.00**
b		Add 5% of cost for dewatering, if required	**metre**	**10801.00**
c		Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	**metre**	**43204.00**
C		**Soft rock (Twin D Type well)**		
(i)		Add Extra over item no. 13.18 (A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**179408.00**
D		**Hard rock (Twin D Type well)**		
(i)		Add Extra over item no. 13.18(A) & (B) irrespective of depth for sinking in Soft Rock	**metre**	**145134.00**
E		**Bouldery strata (Twin D Type well)**		
(i)		Add Extra over item no. 13.18 (A) & (B) irrespective of depth for sinking in rock bouldery strata	**metre**	**150177.00**
13.19	**1200**	**Pneumatic sinking of wells** with equipment of approved design, drawing and specifications worked by competent and trained personnel and comprising of compression and decompression chambers, reducers, two air locks separately for men and plant & materials, arrangement for supply of fresh air to working chambers, check valves, exhaust valves, shafts made from steel plates of riveted construction not less than 6 mm thick to withstand an air pressure of 0.50 MPa, controlled blasting of hard rock where required, staircases and 1 m wide landing plateforms with railing, arrangement for compression and		**237731.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		decompression, electric lighting of 50 V maximum, proper rooms for rest and medical examinations and compliance with safety precautions as per IS:4138, all as per clause1208.8 of MoRTH Specifications.		
13.20	**1207**	**Sand filling** in wells complete as per drawing and technical specifications	**cum**	**1292.00**
13.21	**1200 & 1900**	**Providing steel liner 10 mm thick** for curbs and 6mm thick for steining of wells including fabricating and setting out as per detailed drawing	**tonne**	**100123.00**
13.22	**1200 & 1900**	**Providing Steel Liner** 6-10 mm thick for Pile including Fabricating and Setting out as per Detailed Drawing.	**tonne**	**101642.00**
13.23	**1100 & 1700**	**Bored cast-in-situ M35 grade R.C.C. pile** excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. **(Pile diameter-750 mm)**	**metre**	**13015.00**
13.24	**1100,1600 & 1700**	**Bored cast-in-situ M35 grade R.C.C. pile** excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. **(Pile diameter-1000 mm)**	**metre**	**16862.00**
13.25	**1100 & 1700**	**Bored cast-in-situ M35 grade R.C.C. pile** excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (**Pile diameter-1200 mm)**	**metre**	**20735.00**
13.26	**1100 & 1700**	**Bored cast-in-situ M35 grade R.C.C. pile** excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. **(Pile diameter-1500 mm)**	**metre**	**23203.00**
13.27	**1100 & 1700**	**Driven cast-in-place vertical M35 grade R.C.C. pile** excluding reinforcement complete as per drawing and & Technical Specification **(Pile diameter - 750 mm)**	**metre**	**13015.00**
13.28	**1100 & 1700**	**Driven cast-in-place vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification **(Pile diameter - 1000 mm)**	**metre**	**16862.00**
13.29	**1100 & 1700**	**Driven cast-in-place vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification **(Pile diameter - 1200 mm)**	**metre**	**20735.00**
13.30	**1100 & 1700**	**Driven cast-in-place vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification **(Pile diameter - 1500 mm)**	**metre**	**24168.00**
13.31	**1100 & 1700**	**Driven precast vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification **(Pile Diameter=500 mm)**	**Metre**	**3103.00**
13.32	**1100 & 1700**	**Driven precast vertical M35 grade R.C.C. piles**	**metre**	**4804.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		excluding reinforcement complete as per drawing and & Technical Specification **(Pile Diameter=750 mm)**		
13.33	**1100 & 1700**	**Driven precast vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=1000 mm)	**metre**	**7547.00**
13.34	**1100 & 1700**	**Driven precast vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification **(Size of pile - 300 mm x 300 mm)**	**metre**	**2326.00**
13.35	**1100 & 1700**	**Driven precast vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification **(Size of pile - 500 mm x 500 mm)**	**metre**	**3419.00**
13.36	**1100, 1900**	**Driven precast vertical M35 grade R.C.C. piles** excluding reinforcement complete as per drawing and & Technical Specification **(Size of pile - 750 mm x 750 mm)**	**metre**	**5903.00**
13.37	**1100, 1900**	**Driven vertical steel piles complete as per drawing and & Technical Specification** (Section of the pile - H Section steel column **400 x 250 mm (ISHB Series))**	**metre**	**7530.00**
13.38	**1100, 1900**	**Driven vertical steel piles complete as per drawing and & Technical Specification** (Section of the pile - H Section steel column **450 x 250 mm (ISHB Series))**	**metre**	**7652.00**
13.39	**1100**	**Pile load test on single vertical pile in accordance with IS:2911(Part-IV)**		
(i)		Initial and routine load test	**Tonne**	**1575.00**
(ii)		Lateral load test	**Each Test**	**78750.00**
13.40		**Dismantling of Reinforced Concrete Pile** head complete as per Drawing and Technical Specification	**cum**	**2227.00**
13.41	**1100, 1500 &1700**	**Cement concrete for reinforced concrete in pile** cap complete as per drawing and Technical Specification		
A		**RCC Grade M20**		
(i)		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5377.00**
(ii)		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5434.00**
B		**RCC Grade M25**		
(i)		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5961.00**
(ii)		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5468.00**
C		**RCC Grade M30**		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(i)		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6061.00**
(ii)		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5568.00**
D		**RCC Grade M35**		
(i)		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6263.00**
(ii)		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6319.00**
E		**RCC Grade M40**		
(i)		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6630.00**
(ii)		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6686.00**
F		**RCC Grade M45**		
(i)		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6778.00**
(ii)		With Batching Plant, Transit Mixer and Manual placing	**cum**	**6835.00**
13.42	**1100&1700**	**Levelling course for Pile cap** (Providing and laying of PCC M15 levelling course 100mm thick below the pile cap.)		
(i)		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**4753.00**
(ii)		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5043.00**
13.43	**1600**	**Supplying, fitting and placing un-coated HYSD bar** reinforcement in foundation complete as per drawing and technical specifications	**tonne**	**85365.00**
13.44		**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**	**7528.00**
(ii)		Beyond 1.0 m upto 5.0 m depth	**meter**	**1645.00**
(iii)		Beyond 5.0 m depth	**meter**	**1866.00**
13.45		**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**	**1285.00**

CHAPTER – 14
SUB-STRUCTURE

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
14.01	**1400 & 2200**	**Stone masonry work in cement mortar 1:3** for substructure complete as per drawing and Technical Specifications.		
A		Random Rubble Masonry	**cum**	**5162.00**
B		Coursed rubble masonry (first sort)	**cum**	**5471.00**
C		Ashlar masonry (first sort)	**cum**	**6765.00**
14.02	**1500, 1700 & 2200**	**Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications**		
A		**PCC Grade M15**		
(i)		Height upto 5m	**cum**	**5229.00**
B		**PCC Grade M20**		
(ii)		Height upto 5m	**cum**	**5809.00**
C		**PCC Grade M25**		
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6276.00**
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6504.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6789.00**
D		**PCC Grade M30**		
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6321.00**
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6551.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6838.00**
E		**RCC Grade M20**		
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**5838.00**
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6051.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6316.00**
F		**RCC Grade M25**		
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete	**cum**	**6475.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		Pump		
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6687.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7005.00**
G		**RCC Grade M30**		
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6580.00**
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6766.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7029.00**
H		**RCC Grade M35**		
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6795.00**
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**6943.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7165.00**
I		**RCC Grade M40**		
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7182.00**
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7339.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7574.00**
J		**RCC Grade M45**		
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7340.00**
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7500.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7740.00**
K		**RCC Grade M50**		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(i)		**Height upto 5m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7807.00**
(ii)		**Height 5m to 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**7977.00**
(iii)		**Height above 10m**		
		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**8233.00**
14.03	**Section 1600 & 2200**	**Supplying, fitting and placing HYSD** bar reinforcement in sub-structure complete as per drawing and technical specifications	**tonne**	**85673.00**
14.04	**2706 & 2200**	**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	**each**	**556.00**
14.05	**710.1.4.of IRC:78 & 2200**	**Back filling behind abutment,** wing wall and return wall complete as per drawing and Technical specification		
A		Granular material	**cum**	**1181.00**
B		Sandy material	**cum**	**1633.00**
14.06	**710.1.4.of IRC:78 and 2504.2**	**Providing and laying of Filter media** with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.	**cum**	**1622.00**
14.07	**704**	**Supplying & laying of drainage composite** for use behind walls, between two different fills, alongside drains of road, below concrete lining of canals etc. Geocomposite for planar drainage, realized by thermobonding a draining core in extruded monofilaments with two filtering nonwoven geotextiles that may also be working as separation or protecting layers. The draining three dimensional core will have a "W" configuration as longitudinal parallel channels. Minimum thickness to be 7.2mm, with two filtering UV stabilized polypropylene nonwoven geotextile of minimum thickness of 0.75 mm having pores of 150 micron and tensile strength of 8.0 kN/m that will be working as separation or	**sqm**	**667.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		protecting layer, geocomposite having in plane flow capacity of 2.1 L / (m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 18 kN/m , with mass per unit area of 740 gsm, supplied in the form of roll for easy transportation to site of work as per detailed specification all complete as per directions of Engineer in charge.		
14.08	**704**	**Supplying & laying of drainage composite** for use behind walls, between two different fills, alongside drains of road, below concrete lining of canals etc. having thermobonding a draining core - HDPE geonet comprises of two sets of parallel overlayed ribs integrally connected to have a rhomboidal shape with a polyethylene film and a nonwoven geotextile having mass per unit area 130 g/m2 and tensile strength of 8.0 kN/m that will be working as separation or protecting layer, geocomposite having in plane flow capacity of 0.7 L / (m.s) at hydraulic gradient of 1.0 & 20 kPa pressure and tensile strength of 13.5 kN/ m , with mass per unit area of 830 gsm, at easily accessible location including top and bottom, with all leads and lifts, manpower and machinery, materials, labour etc. complete and as directed by Engineer - In - Charge.	**sqm**	**792.00**
14.09	**2000, 1000 & 2200**	**Supplying, fitting and fixing in position** true to line and level cast steel **rocker bearing** conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	**tonne capacity**	**515.00**
14.10	**2000 , 1000 & 2200**	**Supplying, fitting and fixing in position** true to line and level forged steel **roller bearing** conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	**tonne capacity**	**585.00**
14.11	**2000 & 2200**	**Supplying, fitting and fixing in position** true to line and level sliding plate **bearing with PTFE surface** sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clause 2004 of MoRTH Specifications.	**tonne capacity**	**927.00**
14.12	**2000 & 2200**	**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	**cubic centimetre**	**1.20**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		Technical Specifications.		
14.13	**2000 & 2200**	**Supplying, fitting and fixing in position** true to line and level **sliding plate bearing** with stainless steel plate sliding on stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specifications.	**tonne capacity**	**832.00**
14.14	**2000 & 2200**	**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, completre 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.	**tonne capacity**	**249.00**
14.15		**Providing and fixing in position tar paper bearing** for slab as per approved drawings and specification	**sqm**	**77.00**
14.16		**Providing structural steel for sub-structure** including cutting, bending, welding & erection in position etc. complete as per drawing and technical specifications.	**tonne**	**130314.00**

CHAPTER- 15
SUPER-STRUCTURE

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
15.01	1500 &1600 1700	**Furnishing and Placing Reinforced/Prestressed cement concrete** in super-structure as per drawing and Technical Specification		
A		**RCC Grade M20**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(i)		**For solid slab super-structure**		
(a)		Height upto 5m	**cum**	**6331.00**
(b)		Height 5m to 10m	**cum**	**6595.00**
(c)		Height above 10m	**cum**	**6859.00**
B		**RCC Grade M25**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(i)		**For solid slab super-structure**		
(a)		Height upto 5m	**cum**	**7005.00**
(b)		Height 5m to 10m	**cum**	**7297.00**
(c)		Height above 10m	**cum**	**7588.00**
(ii)		**For T-beam & slab**		
(a)		Height upto 5m	**cum**	**7297.00**
(b)		Height 5m to 10m	**cum**	**7588.00**
(c)		Height above 10m	**cum**	**7880.00**
C		**RCC Grade M 30**		
		Using Batching Plant, Transit Mixer and Concrete Pump.		
(i)		**For solid slab super-structure**		
(a)		Height upto 5m	**cum**	**7119.00**
(b)		Height 5m to 10m	**cum**	**7416.00**
(c)		Height above 10m	**cum**	**7713.00**
(ii)		**For T-beam & slab**		
(a)		Height upto 5m	**cum**	**7416.00**
(b)		Height 5m to 10m	**cum**	**7713.00**
(c)		Height above 10m	**cum**	**8009.00**
D		**RCC/PSC Grade M35**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(i)		**For solid slab super-structure**		
(a)		Height upto 5m	**cum**	**7231.00**
(b)		Height 5m to 10m	**cum**	**7537.00**
(c)		Height above 10m	**cum**	**7843.00**
(ii)		**For T-beam & slab**		
(a)		Height upto 5m	**cum**	**7843.00**
(b)		Height 5m to 10m	**cum**	**8150.00**
(c)		Height above 10m	**cum**	**8456.00**
(iii)		**For box girder and balanced cantilever**		
(a)		Height upto 5m	**cum**	**8456.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(b)		Height 5m to 10m	**cum**	**9069.00**
(c)		Height above 10m	**cum**	**9682.00**
E		**RCC/PSC Grade M-40**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(i)		**For solid slab super-structure**		
(a)		Height upto 5m	**cum**	**7646.00**
(b)		Height 5m to 10m	**cum**	**7970.00**
(c)		Height above 10m	**cum**	**8294.00**
(ii)		**For T-beam & slab**		
(a)		Height upto 5m	**cum**	**7970.00**
(b)		Height 5m to 10m	**cum**	**8294.00**
(c)		Height above 10m	**cum**	**8618.00**
(iii)		**For box girder, pre-cast I-girders and balanced cantilever**		
(a)		Height upto 5m	**cum**	**8942.00**
(b)		Height 5m to 10m	**cum**	**9590.00**
(c)		Height above 10m	**cum**	**10238.00**
F		**RCC/PSC Grade M-45**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(i)		**For solid slab/voided slab super-structure**		
(a)		Height upto 5m	**cum**	**7683.00**
(b)		Height 5m to 10m	**cum**	**8014.00**
(c)		Height above 10m	**cum**	**8345.00**
(ii)		**For T-beam & slab including launching of precast girders by launching truss upto 40 m span**		
(a)		Height upto 5m	**cum**	**8014.00**
(b)		Height 5m to 10m	**cum**	**8345.00**
(c)		Height above 10m	**cum**	**8676.00**
(iii)		**For cast-in-situ box girder, segmental construction and balanced cantilever**		
(a)		Height upto 5m	**cum**	**9007.00**
(b)		Height 5m to 10m	**cum**	**9670.00**
(c)		Height above 10m	**cum**	**10332.00**
G		**PSC Grade M-50**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(i)		**For cast-in-situ box girder, pre-cast I-girders, segmental construction and balanced cantilever**		
(a)		Height upto 5m	**cum**	**9514.00**
(b)		Height 5m to 10m	**cum**	**10219.00**
(c)		Height above 10m	**cum**	**10924.00**
H		**PSC Grade M- 55**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(i)		**For cast-in-situ box girder, pre-cast I-girders,**		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		segmental construction and balanced cantilever		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(a)		Height upto 5m	**cum**	**9653.00**
(b)		Height 5m to 10m	**cum**	**10368.00**
(c)		Height above 10m	**cum**	**11083.00**
I		**PSC Grade M- 60**		
(i)		**For cast-in-situ box girder, pre-cast I-girders, segmental construction and balanced cantilever**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(a)		Height upto 5m	**Cum**	**9881.00**
(b)		Height 5m to 10m	**Cum**	**10613.00**
(c)		Height above 10m	**cum**	**11345.00**
J		**PSC Grade M- 65**		
		Using Batching Plant, Transit Mixer and Concrete Pump		
(i)		**For cast-in-situ box girder, segmental construction and balanced cantilever**		
(a)		Height upto 5m	**Cum**	**9952.00**
(b)		Height 5m to 10m	**cum**	**10689.00**
(c)		Height above 10m	**cum**	**11427.00**
15.02	**1600**	**Supplying, fitting and placing HYSD bar reinforcement** in super-structure complete as per drawing and technical specifications	**tonne**	**85981.00**
15.03	**1800**	**High tensile steel wires/strands** including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications	**tonne**	**175983.00**
15.04	**2702**	**Providing and laying Cement concrete wearing coat M-30 grade** including reinforcement complete as per drawing and Technical Specifications	**cum**	**12750.00**
		Note for Item No. 15.04, use only on prior permission of CE, NH Zone, PWD, Raipur		
15.05	**516 & 2702**	**Mastic Asphalt** (Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-39, 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 clause 516.)	**sqm**	**453.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
15.06	**2703, 1500, 1600 & 1700**	**Construction of precast RCC railing of M30 Grade,** aggregate size not exceeding 12 mm, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	**metre**	**2185.00**
15.07	**2703, 1500, 1600 & 1700**	**Construction of RCC railing of M30 Grade** in-situ with 20 mm nominal size aggregate, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	**metre**	**2116.00**
15.08	**2703.2 & 1900**	**Providing, fitting and fixing mild steel railing complete** as per drawing and Technical Specification	**metre**	**3841.00**
15.09	**2705**	**Drainage Spouts** complete as per drawing and Technical specification	**each**	**2553.00**
15.10	**2700**	**PCC M15 Grade leveling course** below approach slab complete as per drawing and Technical specification		
(i)		With Batching Plant, Transit Mixer and Concrete Pump	**cum**	**4943.00**
(ii)		With Batching Plant, Transit Mixer and Manual placing	**cum**	**5244.00**
15.11	**1500,1600,1700 & 2704**	**Reinforced cement concrete approach slab** including reinforcement and formwork complete as per drawing and Technical specification	**cum**	**10922.00**
15.12	**1600**	**Providing anti-corrosive treatment to HYSD** reinforcement with Fusion Bonded Epoxy Coating (FBEC)	**tonne**	**24542.00**
15.13	**1800 & 2300**	**Precast - pretensioned Girders** (Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawing and technical specifications)	**cum**	**36310.00**
15.14	**1700 & 1800**	**Providing and fixing Helical pipes in voided concrete slabs**	**metre**	**880.00**
15.15	**800**	**Crash Barriers** (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 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the	**metre**	**3970.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified)		
15.16	**800**	**Painting on concrete surface** (Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 Sq.m.)	**Sqm**	**167.00**
15.17	**2605**	**Filler joint**		
(i)		Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.	**metre**	**6096.00**
(ii)		Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.	**metre**	**339.00**
(iii)		Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.	**metre**	**291.00**
(iv)		Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight	**metre**	**34.00**
15.18	**2600**	**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.)	**metre**	**2206.00**
15.19	**2605**	**Elastomeric Slab Steel Expansion Joint** (Providing and laying of an elastomeric slab steel expansion joint, catering to right or skew (less than 20 deg., moderately curved with maximum horizontal movement upto 50 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation and clause 2605 of MoRTH specifications for road & bridge works..)	**metre**	**20165.00**

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
15.20	**2600**	**Compression Seal Joint** (Providing and laying of compression seal joint consisting of steel armoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and fixed into the joint gap with special adhesive binder to cater for a horizontal movement upto 40 mm and vertical movement of 3 mm.)	**metre**	**12224.00**
15.21	**2607**	**Strip Seal Expansion Joint** (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	**metre**	**11563.00**
15.22	**2600**	**Modular Strip / Box Seal Joint** (Providing and laying of a modular strip Box steel expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	**metre**	**29895.00**
15.23	**2600**	**Modular Strip / Box Seal Joint** (Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	**metre**	**35323.00**
15.24		**Painting with synthetic enamel paint bridge No. and span arrangements** (Painting two coats after filling the surface with synthetic enamel paint bridge No. and span arrangements as per as directed by Engineer).	**Nos.**	**217.00**
15.25		**Providing structural steel** for super-structure complete as per drawing and technical specifications	**tonne**	**141646.00**
15.26		**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**
15.27		**Painting on kerbs** in black and yellow alternate bands including cost of material and labour		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		complete as per drawings and specifications as per clause 803.		
		With Road Marking Paint	**RM**	**62.00**
15.28		**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**
15.29		**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**
15.30		**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**
15.31		**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**
15.32		**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**
15.33		**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**
15.34		**Providing and fixing for hand railing top of crash brier** including cost of material complete as per approved drawing	**RM**	**660.00**
15.35		**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 MOST standard drawing No. BD/1-69 'B' and specifications as per section 2600 in:-		

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
(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.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
16.01	**2503**	**Providing and laying boulders apron** on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.		
A		**Boulder laid dry without wire crates.**	**cum**	**1937.00**
16.02	**2503**	**Boulder apron laid in wire crates** (Providing and laying of boulder apron laid in wire crates made with 4mm dia GI wire conforming to IS: 280 & IS:4826 in 100mm x 100mm mesh (weaved diagonally) including 10% extra for laps and joints laid with stone boulders weighing not less than 40 kg each.)	**cum**	**3207.00**
16.03	**2503**	**Cement concrete blocks (size 0.5 x 0.5 x 0.5 m)** (Providing and laying of apron with cement concrete blocks of size 0.5x0.5x0.5 m cast in-situ and made with nominal mix of M-15 grade cement concrete with a minimum cement content of 250 kg/cum as per IRC: 21-2000.)	**cum**	**5042.00**
16.04	**2504**	**Providing and laying Pitching on slopes** laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications		
A		Stone/Boulder	**cum**	**1937.00**
B		Cement Concrete blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15	**cum**	**5042.00**
16.05	**2504**	**Providing and laying Filter material** underneath pitching in slopes complete as per drawing and Technical specification	**cum**	**1864.00**
16.06	**700 & 2504**	**Geotextile Filter** (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.)	**sqm**	**407.00**
16.07	**2505**	**Providing and laying Flooring** complete as per drawing and Technical specifications laid over cement concrete bedding.		
A		Rubble stone laid in cement mortar 1:3	**cum**	**5360.00**
B		Cement Concrete blocks Grade M15	**cum**	**6640.00**
16.08	**2506**	**Dry rubble Flooring** (Construction of dry rubble flooring at cross drainage works for relatively less important works.)	**cum**	**2454.00**
16.09	**2507.2**	**Curtain wall** complete as per drawing and Technical specification		
A		Cement concrete Grade M15	**cum**	**4945.00**

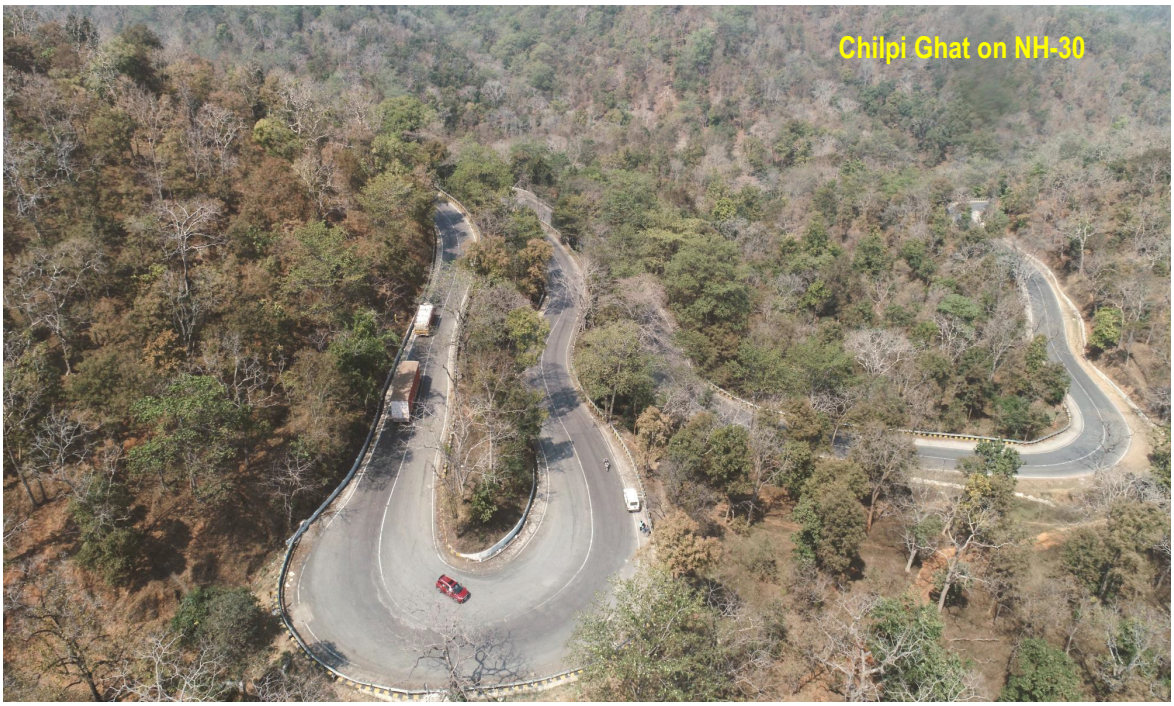
Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
16.10	**2507.2**	**Flexible Apron :**Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.	**Cum**	**2033.00**
16.11	**2503.3**	**Gabian Structure for Retaining Earth** (Providing and construction of a gabain structure for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5 m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire)	**Cum**	**3418.00**
16.12	**2503.3**	**Gabian Structure for Erosion Control, River Training Works and Protection works** (Providing and constructing gabain structures for erosion control, river training works and protection works with wire crates of size 2 m x 1 m x 0.3 m each divided into 1m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be securely tied with 4 mm galvanised steel wire.)	**cum**	**5648.00**
16.13	**2503.3**	**Providing & making Gabion structure** with Mechanically Woven Double Twisted Hexagonal Shaped Wire mesh Gabion Boxes as per IS 16014:2012, MORT&H Clause 2500, of required size, Mesh Type 10x12 (D=100 mm with tolerance of ± 2%) Zinc coated, Mesh wire diameter 3.0 mm, mechanically edged/selvedged with partitions at every 1m interval and shall have minimum 10 numbers of openings per meter of mesh perpendicular to twist, tying with lacing wire of diameter 2.2 mm, supplied @3% by weight of Gabion boxes, filled with boulders with least dimension of 200 mm, as per drawing, all complete as per direction of Engineer-in-charge.	**cum**	**2386.00**
16.14		**Laying of a fine aggregate concrete grade M30 filled fabric form for erosion protection of embankments** (Embankment Erosion Protection using Fine Aggregate Concrete Filled Fabric Form Mattress system)	**sqm**	**4634.00**

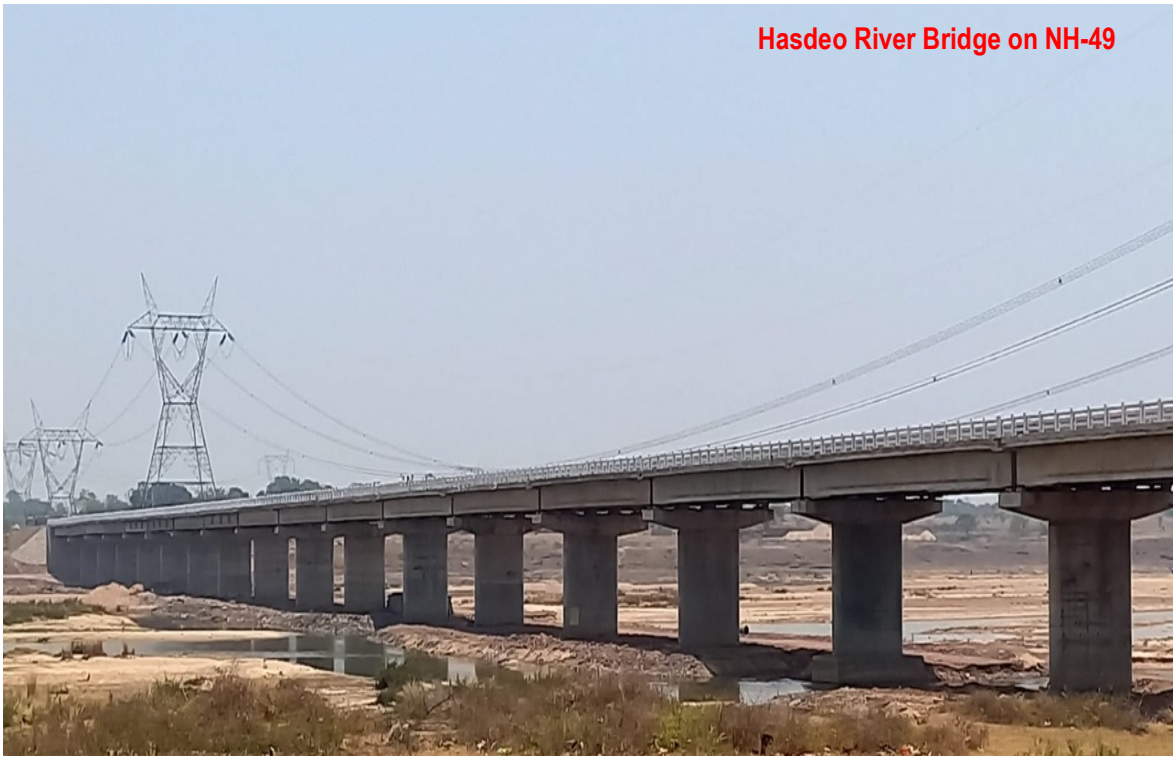
Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
16.15		**Providing and laying brick on edge flooring with 1st class bricks** including cement slurry in cement sand mortar 1:4 complete as per drawing and specifications as per section 1000 & 1300.	**sqm**	**314.00**
16.16		**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**
16.17		**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**
16.18		**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**
16.19		**Grouting with C.M. 1:4 in Pitching** as per drawing in technical specification	**cum**	**1100.00**

CHAPTER- 17
REPAIR AND REHABILITATION

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
17.01	2811	**Removal of existing cement concrete wearing coat** including its disposal complete as per Technical specification without causing any detrimental effect to any part of the bridge structure and removal of dismantled material with all lifts and lead upto 1000m(Thickness 75 mm)	sqm	166.00
17.02	2811	**Removal of existing asphaltic wearing coat** comprising of 50 mm thick asphaltic concrete laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000m.	sqm	126.00
17.03	2807	**Guniting concrete surface** with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical specification	sqm	1679.00
17.04	2800	**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	217.00
17.05	2806	**Sealing of cracks/porous concrete** by injection process through nipples/Grouting complete as per Technical specification.		
A		Cement Grout	kg	131.00
B		Cement mortar (1:1) Grouting	kg	249.00
17.06	2800	**Patching of damaged concrete surface** with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer and as approved by the Engineer.	sqm	5877.00
17.07	2803	**Sealing of crack / porous concrete with Epoxy Grout** by injection through nipples complete as per clause 2803.1.	Kg	1774.00
17.08	2804	**Applying epoxy mortar over leached**, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification	sqm	999.00
17.09	2807	**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,	sqm	948.00

Item No.	Reference to MoRTH Specification	Descriptions	Unit	Rate excluding GST (in Rs.)
		strength not less than 25 Mpa and workmanship conforming to clause 2807.6.		
17.10	**2800**	**Applying pre-packed cement based** polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete	**Sqm**	**339.00**
17.11	**2805**	**Eproxy bonding of new concrete to old concrete**	**sqm**	**1365.00**
17.12	**2812**	**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	**tonne**	**444687.00**
17.13	**2812**	**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	**tonne**	**428010.00**
17.14	**2812**	**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	**tonne**	**390430.00**
17.15	**2810**	**Replacement of bearings complete as per Technical specification**	**each**	**47071.00**
17.16	**2811**	**Rectification of bearings as per Technical specifications**	**each**	**10606.00**
17.17		**Replacement of Expansion Joints complete as per drawings**	**metre**	**3441.00**
17.18		**Replacement of damaged concrete railing.**	**metre**	**2560.00**
17.19		**Replacement of crash barrier.**	**metre**	**664.00**
17.20		**Replacement of damaged mild steel railing**	**metre**	**4158.00**
17.21		**Repair of crash barrier** (Repair of concrete crash barrier with cement concrete of M-30 grade by cutting and trimming the damaged portion to a regular shape, cleaning the area to be repaired thoroughly, applying cement concrete after erection of proper form work.)	**metre**	**271.00**
17.22		**Repair of RCC Railing** (Carrying out repair of RCC M30 railing to bring it to the original shape.)	**metre**	**204.00**
17.23		**Repair of steel Railing** (Repair of steel railing to bring it to the original shape)	**metre**	**363.00**





NATIONAL HIGHWAY ZONE,
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