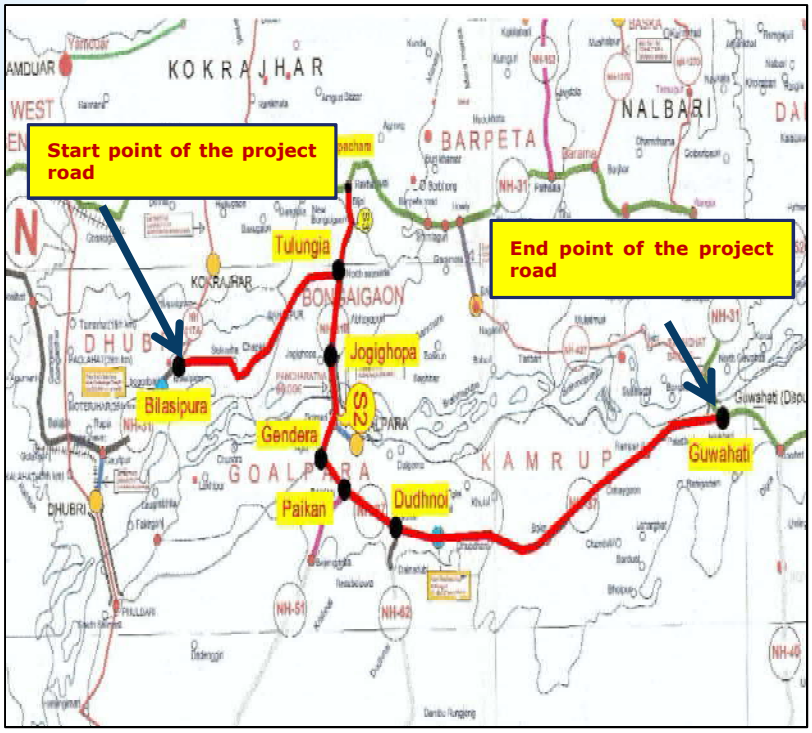
Consultancy Services for preparation of DPR for development of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under Bharatmala Pariyojana (Lot-1) Package 1A (Bilasipura – Chapar – Tulungia – Jogighopa – Gendera – Paikan – Dudhnoi – Guwahati Road (Length 225.000 km) in the State of Assam)

FINAL DETAILED PROJECT REPORT

PKG-5: (Ex.Ch.52.470km to Ex.Ch.71.500km)
(Design Ch.48.655km to Ch.67.556)

VOLUME – V : Technical Specification
VOLUME – VI : Rate Analysis
VOLUME – VII: Cost Estimates
VOLUME – VIII : Bill of Quantities



Submitted To

National Highways & Infrastructure Development Corporation Ltd.

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CETEST Engineering Consultants

CET/4146/NHIDCL-ASSAM/FDPR	Rev: R3	OCTOBETR, 2020

GENERAL ABSTRACT OF COST

Bilasipara-Jalukbari Road (PKG-5: Km 48.655 to Km 67.556) & (km 0.000 km to km1.071)

	Length of Road (km)	:		**18.901**
	Length of CD & Bridge works (km)	:		**1.785**
	Length of Pavement excluding CD works (km)	:		**17.116**

Sl No	DESCRIPTION OF WORKS	TOTAL COST (IN Cr.)	COST PER KM. OF TOTAL ROAD LENGTH (IN Cr.)	% of Total Civil Works Cost
A.	**ROAD WORKS**			
1	Site Clearance	1.10	0.06	0.25%
2	Earthwork, Erosion Control	36.46	1.93	8.44%
3	Sub-Base & Base Courses	48.22	2.55	11.17%
4	Bituminous surface	36.24	1.92	8.39%
5	Traffic signs, Road marking & other road appurtenances	6.92	0.37	1.60%
6	Drainage & Protection Works			
a)	RCC Cover Drain	4.66	0.25	1.08%
b)	RE WALL	43.32	2.29	10.03%
c)	RR Masonry Chute Drain	0.25	0.01	0.06%
d)	Retaining Wall	5.67	0.30	1.31%
e)	Toe Wall	2.62	0.14	0.61%
f)	Ground Improvement Works (Sand Pile)	7.10	0.38	1.64%
g)	Protection Work(Stone Pitching)	1.93	0.10	0.45%
7	Project Facilities			
a)	Bus Bay with passenger shelter	1.34	0.07	0.31%
8	Junction	1.37	0.07	0.32%
9.1	Service Road	5.63	0.30	1.30%
9.2	Diversion Road	1.15	0.06	0.27%
10	Utility Duct	4.64	0.25	1.07%
	Total for Road Works=	**208.62**	**11.05**	**48.31%**
B.	**BRIDGES, CULVERTS & ROB**			
11	Major Bridges	12.58	0.67	2.91%
12	Minor Bridges	55.26	2.92	12.80%
13	ROB	114.17	6.04	26.44%
14	VUP	8.17	0.43	1.89%
15	Low Height Subway	4.22	0.22	0.98%
16	Culvert	28.80	1.52	6.67%
17	Repairing & Rehabilitation of Bridges	0.010	0.0005	0.00%
	Total for Structure Works=	**223.21**	**11.81**	**51.69%**
C.	**Cost of Civil Works in Cr.**	**431.83**	**22.85**	
	Cost Put to the Tender	**431.83**		
D.	**Maintenance for 5 years , i.e 2.5% on Civil cost (C)**	10.80		
E.	GST @ 12% of (C)	51.82		
F.	Contingencies @ 2.8% of **(C)**	12.09		
G.	Supervision Consultancy Charges @ 3% of (C)	12.95		
H.	Agency Charges @ 3% of **(C)**	12.95		
I.	Escalation Cost @ 5% on (C) during Construction Period (For 1 Years)	21.59		
J.	**Total Centages and contigencies/GST (J= D+E+F+G+H+I)**	**122.20**	**6.47**	
	Departmental Cost			
a.	LA Cost for Construction	45.63		
b.	Compensation for structures	25.10		
c.	Utility Shifting Cost	5.59		
d.	Environmental Mitigation Cost	1.54		
K.	**Total Departmental Cost(K=a+b+c+d)**	**77.86**		
L.	**Total Capital Cost/(L=C+J+K)**	**631.89**	**33.43**	

Volume-V: Technical Specification

Technical Specification

1.1 General

The Technical specifications covering the materials and the workmanship aspects as well as method of measurements and payments are included in this section. These specifications cover the items of civil and non-civil works coming under scope of this document. All work shall be carried out in conformity with the same. The works shall be executed in accordance with good practices followed for achieving high standards of workmanship, thus ensuring safety and durability of the construction. All codes and standards referred to in these specifications shall be the latest thereof unless otherwise stated.

1.1.1. Inclusive Documents

The provisions of special conditions of contract, those specified elsewhere in the tender document, as well as execution drawings and notes, or other specifications issued in writing by the Engineer shall form part of the technical specifications of this project.

The attention of the contractor is drawn to those clauses of codes which require supporting specification either by the Engineer or by 'Mutual agreement between the supplier and purchaser'. In such cases, it is the responsibility of the tenderer /contractor to seek clarification on any uncertainty and obtain prior approval of the Engineer before taking up the supply/construction. In absence of such prior clarification, the Engineer's choice/design will be final and binding on the contractor without involving separately any additional payment.

1.1.2. Defective Works

All defective works are liable to be demolished, rebuilt and defective materials replaced by the contractor at his own cost. In the event of such works being accepted by carrying out repairs etc. as specified by the Engineer the cost of repairs will be borne by the contractor.

1.2 Site Information

The information given hereunder and provided elsewhere in these documents is given in good faith by the Employer but the Contractor shall satisfy himself regarding all aspects of site conditions and no claim will be entertained on the plea that the information supplied by the Employer is erroneous or insufficient.

1.2.1 Location

The area in which the works are located is mostly Plain terrain.

The Project Road starts at Beltoli (junction with SH-5) near Bilasipara road Passes through village / localities namely Bilasipara, Gourang Nagar, Chirakuthi, Sonamukhi, Koliarkhal, Tilapara, MohishBathan, Salkocha, Hatipota, Dhirghat, Arayarjhar, KharidaGossaigaon, Chapar, Bahalpur, Nitya Bazar, KayetPipeara, Talguri, Salbari, Besimari, Boitamari, Borkhata (Nolbari), Khagarpur, Uttar Salmara, Tulungia (junction with NH-117), Deohati, Choutaki, Singimari, Nalipara, Kherkabari, Katashbari, Khoragaon, Garaimari, Chalantapara, KabaitaryTinali, Oudubi, Jogighopa, Kharbhuja, Makri, Dakurivitha, Hadalpara, Kalyanpur,

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Solmari, Gendra, Balijan, Budhipara, Agia, Ulupara, AgiaPaharkata, KalpaniChandmari, Bolbolla, Phaphanga, Godhar Bari, TukuraBormahara, Bhimajuli, Paikan, Krishnai, Jyoti Nagar, MolanDubi, Beki Paul, Salpara, Darapara, Dabli, Letheng, Lela, Mondal gram, Makhipara, Dudhnoi, Fafal, Puranibitha, Amjonga, Kachadal, Darangiri, Dosimapara, Rangjuli, Dhanubhanga, Deoshila, Gathiapara, Kothakuthi, Dhupdhara, Sakite, Hakite, Bandapara, Kukurmara, Rajapara, Dhupguri, Chukunai Para, Burgrui, Singra, BokoNagopara, ChakBaho, BokoJarapara, BokoDakhurpara, Boko, Barpara, Turukpur, Turukpara, AguckaBoko, lampara, Bripara, Bongaon market, Bamunigaon, Khabibe, Gobardhan, Kumi, Chhaygaon, Champak Nagar, Kharavanga, Kukurmara, Bartezpur, Surutezpur, Rampur, Bhagabatipara, Rajapokubi, Batarhat, Haligaon, Bijoynagar, Uparhali, Sarpara, Mirza, Barkuchi, Sontola, Bongara, Khuikuchi, Bullapara, VIP chok, Kahikuchi, Azara, Lankeswarandends at Jalukbari Interchange in Guwahati in the state of Assam. Existing length of the project road is 215.578 Km and Design length is 214.520 Km. The entire project road is divided in 16(sixteen) packages.

The PKG-5 of the project road starts from Tulungia(Junction with NH-117) and ends ater Jogighopa Bridge (Ex.Ch.52.470km to Ex.Ch.71.500km). Design length of the PKG-5 comes out as 18.901 km (Design Ch.48.655km to Ch.67.556km).The entire package falls under Bongaigaon district of Assam.

1.2.2 General Climatic Conditions

As the Brahmaputra flows in Assam the climate here is cold and there is rainfall most of the month. Geomorphic studies conclude that the Brahmaputra, the life-line of Assam is an antecedent river, older than the Himalayas. 35 and 38 degree Celsius in Summer & around 6 to 8 degree Celsius in Winter. Rainfall 2,818 mm average.

1.2.3 Seismic Zone

The works are located in Seismic Zone V as defined in IRC: 6-2000.

2. GENERAL REQUIREMENTS

The Technical Specifications in accordance with which the entire work described hereinafter shall be constructed and completed by the Contractor shall comprise of the following:

2.2 PART-I: General Technical Specifications

The General Technical Specifications shall be the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (FIFTH REVISION, April 2013)", issued by the Ministry of Road Transport & Highways, Government of India and published by the Indian Roads Congress (IRC), with a cross reference to relevant Bureau of Indian Standards (BIS) for materials or other aspects not covered by the IRC.

2.3 Additional Technical Specifications

The Additional Specifications shall comprise of specifications for particular item of works not already covered in PART-I.

2.2.6. Additional Specifications

The following Appendices have been added to the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS" (FIFTH REVISION, April 20013).

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3. Appendix A-1 Specification for Passenger Shelter

4. Appendix A-2 Painting on Structures with Synthetic Enamel paints for Numbering & Span Details of Bridges / Culverts and water Proof Cement Paint for Parapet, Railing Kerb and Crash Barrier

ADDITIONAL TECHNICAL SPECIFICATION

Appendix A-1 :: SPECIFICATION FOR PASSENGER SHELTER

1. Scope

The work consists of providing passenger shelter including seating arrangement as per drawing.

2. Description

2.1 Passenger Shelter

It will be a permanent structure supported on R.C. columns at the corners and having sloped reinforced concrete slab with protrusions on all sides. Panel walls on three sides shall be built with brick jail of 125mm thick set in cement mortar 1:4 (1 part cement : 4 parts sand). It shall have seating arrangement with 100mm thick R.C. slab with raised back with atleast 1.5% reinforcement. The mix of concrete for seating slab and back shall be nominal one with 1:2:4 (1 part cement : 2 parts sand : 4 parts stone chips) and it will be finished with neat cement punning not less than 3mm thickness. The flooring shall be with 25mm thick I.P.S. flooring (1:2:4) over 100mm thick M-10 grade concrete. All walls, ceiling and roof top shall be finished with cement mortar (1:4). The exposed surfaces of the structure shall be painted with two coats of cement based paint of make and brand approved by the Engineer.

2.2 Raised Footpath

Raised footpath shall be constructed with one layer of Paver block laid over 100mm thick M-10 concrete. The joints of top layer of soling shall be filled up with cement mortar (1:3).

All works shall be done as per drawings.

3.0 Measurement for Payment

The passenger shelter shall be measured in number of finished constructed structure.

4.0 Rate

The Contract unit rate shall be payment in full for construction of the passenger shelter. Raised footpath, ground preparation etc. shall be considered as incidental to work.

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Appendix A-2:: PAINTING OF STRUCTURES WITH SYNTHETIC ENAMEL PAINT FOR NUMBERING & SPAN DETAILS OF BRIGES / CULVERTS AND WATER PROOF CEMENT PAINT FOR PARAPET, RAILING, KERB AND CRASH BARRIER

1. Painting with Synthetic Enamel Paint

Materials

Synthetic enamel paint confirming to IS : 2932 of approved brand and manufacture and of the required colour shall be used for the top coat and an undercoat of ordinary paint of shade to match the top coat as recommended by the same manufacturer as far as top coat shall be used.

Painting on New Surface

Preparation of surface:

The surface shall be thoroughly cleaned and dusted off. All dirt, mortar droppings and grease shall be thoroughly removed before painting is started. The prepared surface shall have received the approval of the Engineer after inspection , before painting is commenced..

Application: The number of coats including the undercoat shall be as stipulated in the item.

(a) **Under coat:** One coat of the specified ordinary paint of shade suited to the shade of the top coat, shall be applied and allowed to dry overnight. It shall be rubbed next day with the finest grade of wet abrasive paper to ensure a smooth and even surface, free from brush marks and all loose particles dusted off.

(b) **Top Coat:** Two top coats of synthetic enamel paint of desired shade shall be applied after the undercoat is thoroughly dry. Additional finishing coats shall be applied if found necessary to ensure properly uniform glossy surface.

Lettering and Numbering on New Surface:

The letters and numbers for bridges/culverts span and number shall be as per IRC-7-1971. The size of area for painting shall be varied depend upon the numbers and letters. The background area and letters/numbers shall be painted with one prime coat (under coat) and two coats (top coat) of synthetic enamel paint.

Measurement for payment:

The painting of culverts /Bridges numbering and span arrangement shall be measured in number of each side facing traffic.

Rate:

Rate shall include the cost of materials, labour and other operation described above to complete set of letters and numbers required in each side facing traffic.

2. Water Proof Cement Painting

Material:

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The water proof cement paint shall be (conforming to IS: 5410) of approved brand and manufacture.

The water cement paint shall be brought to the site of work by the contractor in its original container in sealed condition. The material shall be brought in at a time in adequate to suffice for the whole work or at least a fortnight's work, the material be kept in the joint custody of the Contractor and the Engineer-in-Charge. The empties shall not be removed from the site of work till the relevant item of the work has been completed and permission obtained from the Engineer-in-Charge.

Preparation of Surface:

For New work, the surface shall be thoroughly cleaned of all mortar dropping, dirt, dust, algae, grease and other foreign matter by brushing and washing. Pitting in plaster shall be made good and a coat of waterproof cement paint shall be applied over patches after wetting them thoroughly.

Preparation of mix:

Cement paint shall be mixed in such quantities as can be used up within an hour of its mixing as otherwise the mixture will set and thicken, affecting flow and finish, Cement paint shall be mixed with water in two stages. The first stage shall comprise of 2 parts of cement paint and one part of water stirred thoroughly and allowed to stand for 5 minutes. Care shall be taken to add the cement paint gradually to the water and not vice versa. The second stage shall comprise of adding further one part of water to the mix and stirring thoroughly to obtain a liquid of workable and uniform consistency. In all cases the manufacturer's instructions shall be followed meticulously.

The lids of cement paint drums shall be kept tightly closed when not in use, as by exposure to atmosphere the cement paint rapidly becomes air set due to its hygroscopic qualities.

In case of cement paint brought in gunny bags, once the bag is opened, the contents should be consumed in full on the day of its opening. If the same is not likely to be consumed in full, the balance quantity should be transferred and preserved in an airtight container to avoid its exposure to atmosphere.

Application:

The solution shall be applied on the clean and wetted surface with brushes or spraying machine. The solution shall be kept well stirred during the period of application. It shall be applied on the surface which is on the shady side of the building so that the direct heat of the sun on the surface is avoided. The method of application of cement paint shall be as per manufacturer's specification. The completed surface shall be watered after the day's work.

The second coat shall be applied after the first coat has been set for at least 24 hours. Before application of the second or subsequent coats, the surface of the previous coat shall not be wetted.

For the work, the surface shall be treated with three or more coat of waterproof cement paint as found necessary to get a uniform shade.

For old work, the treatment shall be with one or more coats as found necessary to get a uniform shade.

Precaution:

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Water proof cement paint shall not be applied on surfaces already treated with white wash, colour wash, distemper dry or oil bound, varnishes, paints, etc. It shall not be applied on gypsums, wood and metal surfaces.

If water proof cement paint is required to be applied on existing surfaces previously treated with white wash, colour wash, etc., the surface shall be thoroughly cleaned by scrapping off all the white wash, colour was etc., completely. Thereafter, a coat of cement primer shall be applied followed by two or more coats of water proof cement paint.

Measurement for Payment:

The painting shall be measured in square metre of surface area treated.

Rate:

Rate shall include one prime coat and two coats of the paint over the prime coat including cost of all labour and materials involved in all operations described above.

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Volume-VI: Rate Analysis

Input

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INPUT (A) Usage Rates of Plant and Machinery						
Sl. No.	**Description of Machine**	**Activity**	**Output of Machine**	**Output**	**Unit**	**Rate**
P&M-001	Air Compressor	General Purpose	capacity in cfm	170/250	hour	334
P&M-002	Batching and Mixing Plant (a) 30 cum capacity	Concrete Mixing	cum/hour	20	hour	2302
P&M-003	Batching and Mixing Plant (b) 15 - 20 cum capacity	Concrete Mixing	cum/hour	13	hour	1870
P&M-004	Bitumen Pressure Distributor	Applying bitumen tack coat	sqm/hour	1750	hour	1122
P&M-005	Bitumen Boiler oil fired	Bitumen Spraying	capacity in litre	1500	hour	209
P&M-006	Concrete Paver Finisher with 40 HP Motor	Paving of concrete surface	cum / hour	20	hour	2935
P&M-007	Concrete Pump of 45 & 30 cum capacity	Pumping of concrete	cum / hour	33 / 22	hour	275
P&M-008	Concrete Bucket	For Pouring concrete	capacity in cum	1	hour	18
P&M-009	Concrete Mixer (a) 0.4/0.28 cum	Concrete Mixing	cum/hour	2.5	hour	238
P&M-010	Concrete Mixer (b) 1 cum	Concrete Mixing	cum/hour	7.5	hour	238
P&M-011	Crane (a) 80 tonnes	Lifting Purpose			hour	1336
P&M-012	Cranes b) 35 tonnes	Lifting Purpose			hour	893
P&M-013	Cranes c) 3 tonnes	Lifting Purpose			hour	374
P&M-014	Dozer D - 80 - A 12	Spreading /Cutting / Clearing	cum/hour	300/ 150/250	hour	3757
P&M-015	Dozer D - 50 - A 15	Spreading /Cutting / Clearing	cum/hour	200/ 120/150	hour	2311
P&M-016	Emulsion Pressure Distributor	Applying emulsion tack coat	sqm/hour	1750	hour	843
P&M-017	Front End loader 1 cum bucket capacity	Soil loading / Aggregate loading	cum/hour	60 /25	hour	803
P&M-018	Generator (a) 125 KVA	Genration of electric Energy	KVA	100	hour	980
P&M-019	Generator(b) 63 KVA	Genration of electric Energy	KVA	50	hour	605
P&M-020	GSB Plant 50 cum	Producing GSB	cum/hour	40	hour	1341
P&M-021	Hotmix Plant - 120 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	40	hour	26844
P&M-022	Hotmix Plant - 100 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	30	hour	19496
P&M-023	Hotmix Plant - 60 to 90 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	25	hour	16602
P&M-024	Hotmix Plant - 40 to 60 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	17	hour	14560
P&M-025	Hydraulic Chip Spreader	Surface Dressing	sqm/hour	1500	hour	2799
P&M-026	Hydraulic Excavator of 1 cum bucket	Soil Ordinary/Soil Marshy / Soil Unsuitable	cum/hour	60 /60 /60	hour	1622
P&M-027	Integrated Stone Crusher 100THP	Crushing of Spalls	TPH	100	hour	8492
P&M-028	Integrated Stone Crusher 200 HP	Crushing of Spalls	TPH	200	hour	16924
P&M-029	Kerb Casting Machine		Rm/hour	80	hour	334
P&M-030	Mastic Cooker	Mastic Wearing coat	capacity in tonne	1	hour	66
P&M-031	Mechanical Broom Hydraulic	Surface Cleaning	sqm/hour	1250	hour	396
P&M-032	Motor Grader 3.35 mtr blade	Clearing /Spreading /GSB /WBM	cum/hour	200/200/ 50/50	hour	2628

P&M-033	Mobile slurry seal equipment	Mixing and laying slurry seal	sqm/hour	2700	hour	2437
P&M-034	Paver Finisher Hydrostatic with sensor control 100 TPH	Paving of DBM/ BM/SDC/ Premix	cum/hour	40	hour	2753
P&M-035	Paver Finisher Mechanical 100 TPH	Paving of WMM /Paving of DLC	cum/hour	40/30	hour	1003
P&M-036	Piling Rig with Bantonite Pump	0.75 m dia to 1.2 m dia Boring attachment	Rm/hour	2 to 3	hour	5487
P&M-037	Pneumatic Road Roller	Rolling of Asphalt Surface	cum/hour	25	hour	1337
P&M-038	Pneumatic Sinking Plant	Pneumatic Sinking of wells	cum/hour	1.5 to 2.00	hour	4061
P&M-039	Pot Hole Repair Machine	Repair of potholes	cum/hour	4	hour	1040
P&M-040	Prestressing Jack with Pump & access	Stressing of steel wires/stands			hour	133
P&M-041	Ripper	Scarifying	cum/hour	60	hour	36
P&M-042	Rotavator	Scarifying	cum/hour	25	hour	26
P&M-043	Road marking machine	Road marking	Sqm/hour	100	hour	124
P&M-044	Smooth Wheeled Roller 8 tonne	Soil Compaction /BM Compaction	cum/hour	70/25	hour	676
P&M-045	Tandem Road Roller	Rolling of Aspalt Surface	cum/hour	30	hour	1222
P&M-046	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	km	470
P&M-047	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	tonne.km	71
P&M-048	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	hour	492
P&M-049	Transit Mixer 4.0/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	hour	974
P&M-050	Transit Mixer 4/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	tonne.km	47
P&M-051	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	hour	893
P&M-052	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	tonne.km	41
P&M-053	Tractor	Pulling	capacity in HP	50	hour	380
P&M-054	Tractor with Rotevator	Rate of Tractor + Rotevator			hour	507
P&M-055	Tractor with Ripper	Rate of Tractor 6+ Ripper			hour	518
P&M-056	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	km	382
P&M-057	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	hour	518
P&M-058	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	tonne.km	4
P&M-059	Vibratory Roller 8 tonne	Earth or soil / GSB / WBM	cum/hour	100/60/60	hour	1671
P&M-060	Water Tanker	Water Transport	capacity in KL	6	hour	518
P&M-061	Water Tanker	Water Transport	capacity in KL	6	km	21
P&M-062	Wet Mix Plant 60 TPH	Wet Mix	cum/hour	25	hour	1351

Sl. No.	Description of Machine	Unit	0
P&M-063	Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	334
P&M-064	Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	2352
P&M-065	Belt conveyor system	hour	2470
P&M-066	Boat to carry atleast 20 persons	hour	235
P&M-067	Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6150
P&M-068	Cement concrete batch mix plant @ 75 cum per hour	hour	4705
P&M-069	Cold milling machine @ 20 cum per hour	hour	806
P&M-070	Crane 5 tonne capacity	hour	806
P&M-071	Crane 10 tonne capacity	hour	882
P&M-072	Crane 15 tonne capacity	hour	912
P&M-073	Crane 20 tonne capacity	hour	941
P&M-074	Crane 40 T capacity	hour	994
P&M-075	Crane with grab 0.75 cum capacity	hour	1394
P&M-076	Compressor with guniting equipment along with accessories	hour	470
P&M-077	Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	2187
P&M-078	Epoxy Injection gun	hour	353
P&M-079	Generator 33 KVA	hour	366
P&M-080	Generator 100 KVA	hour	730
P&M-081	Generator 250 KVA	hour	1764
P&M-082	Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	4061
P&M-083	Joint Cutting Machine with 2-3 blades (for rigid pavement)	hour	176
P&M-084	Jack for Lifting 40 tonne lifting capacity.	day	235
P&M-085	Piling rig Including double acting pile driving hammer (Hydraulic rig)	hrs	1176
P&M-086	Plate compactor	hour	256
P&M-087	Snow blower equipment 140 HP @ 600 cum per hour	hour	1176
P&M-088	Texturing machine (for rigid pavement)	hour	941
P&M-089	Truck Trailor 30 tonne capacity	hour	588
P&M-090	Vibrating Pile driving hammer complete with power unit and accessories.	hour	1000
P&M-091	Wet Mix Plant 100 TPH	hour	1967
P&M-092	Wet Mix Plant 75 TPH	hour	1591

(B) Labour

Sl. No.	Description of Labour	Unit	Rate
L-01	Blacksmith (IInd class)	day	**318**
L-02	Blacksmith (Ist class)/ Welder/ Plumber/ Electrician	day	**353**
L-03	Blaster (Stone cutter)	day	**353**
L-04	Carpenter I Class	day	**353**
L-05	Chiseller (Head Mazdoor)	day	**294**
L-06	Driller (Jumper)	day	**294**
L-07	Diver	day	**294**
L-08	Fitter	day	**235**
L-09	Mali	day	**235**
L-10	Mason (IInd class)	day	**294**
L-11	Mason (Ist class)	day	**353**
L-12	Mate / Supervisor	day	**329**
L-13	Mazdoor	day	**153**
L-14	Mazdoor/Dresser (Semi Skilled)	day	**176**
L-15	Mazdoor/Dresser/Sinker (Skilled)	day	**245**
L-16	Medical Officer	day	**765**
L-17	Operator(grouting)	day	**318**
L-18	Painter I class	day	**353**
L-19	Para medical personnel	day	**353**

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(C) Materials

Sl. No.	Description	Unit	Rate
M-001	Stone Boulder of size 150 mm and below at Cruser Plant	cum	1001
M-002	Supply of quarried stone 150 - 200 mm size for Hand Broken at site	cum	882
M-003	Boulder with minimum size of 300 mm for Pitching at site	cum	859
M-004	Coarse sand at Mixing Plant	cum	1176
M-005	Coarse sand at Site	cum	1176
M-006	Fine sand at Site	cum	1294
M-007	Moorum at Site	cum	687
M-008	Gravel/Quarry spall at Site	Cum	970
M-009	Granular Material or hard murrum for GSB works at Site	Cum	979
M-010	Granular Material or hard murrum for GSB works at Mixing Plant	Cum	979
M-011	Fly ash conforming to IS: 3812 (Part II & I) at HMP Plant/Batching Plant/ Crushing Plant	Cum	1097
M-012	Filter media/Filter Material as per Table 300-3 (MoRT&H Specification)	Cum	1191

	Description	Unit	Rate at Plant (HMP / Batching)	Rate at Quarry Site
M-013	Close graded Granular sub-base Material 53 mm to 9.5 mm	cum	1449	1449
M-014	Close graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	1567	1567
M-015	Close graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	1681	1681
M-016	Close graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	1681	1681
M-017	Close graded Granular sub-base Material 9.5 mm to 2.36 mm	cum	1681	1681
M-018	Close graded Granular sub-base Material 4.75mm to 2.36 mm	cum	1681	1681
M-019	Close graded Granular sub-base Material 4.75mm to 75 micron mm	cum	1681	1681
M-020	Close graded Granular sub-base Material 2.36 mm	cum	897	897
M-021	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve.	cum	470	470
M-022	Coarse graded Granular sub-base Material 2.36 mm & below	cum	861	861
M-023	Coarse graded Granular sub-base Material 4.75mm to 75 micron mm	cum	1244	1244
M-024	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm	cum	1567	1567
M-025	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	1685	1685
M-026	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm	cum	1661	1661
M-027	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	1673	1673
M-028	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	1508	1508
M-029	Coarse graded Granular sub-base Material 53 mm to 26 .5 mm	cum	1402	1402
M-030	Aggregates below 5.6 mm	cum	1411	1411
M-031	Aggregates 22.4 mm to 2.36 mm	cum	1529	1529
M-032	Aggregates 22.4 mm to 5.6 mm	cum	1529	1529
M-033	Aggregates 45 mm to 2.8 mm	cum	1600	1600
M-034	Aggregates 45 mm to 22.4 mm	cum	1588	1588
M-035	Aggregates 53 mm to 2.8 mm	cum	1600	1600
M-036	Aggregates 53 mm to 22.4 mm	cum	1529	1529
M-037	Aggregates 63 mm to 2.8 mm	cum	1529	1529
M-038	Aggregates 63 mm to 45 mm	cum	1470	1470
M-039	Aggregates 90 mm to 45 mm	cum	1411	1411
M-040	Aggregates 10 mm to 5 mm	cum	1529	1529
M-041	Aggregates 11.2 mm to 0.09 mm	cum	1529	1529
M-042	Aggregates 13.2 mm to 0.09 mm	cum	1588	1588
M-043	Aggregates 13.2 mm to 5.6 mm	cum	1588	1588
M-044	Aggregates 13.2 mm to 10 mm	cum	1588	1588
M-045	Aggregates 20 mm to 10 mm	cum	1529	1529
M-046	Aggregates 25 mm to 10 mm	cum	1411	1411
M-047	Aggregates 19 mm to 6 mm	cum	1529	1529
M-048	Aggregates 37.5 mm to 19 mm	cum	1529	1529
M-049	Aggregates 37.5 mm to 25 mm	cum	1529	1529

M-050	Aggregates 6 mm nominal size	cum	1411	1411
M-051	Aggregates 10 mm nominal size	cum	1529	1529
M-052	Aggregates 13.2/12.5 mm nominal size	cum	1588	1588
M-053	Aggregates 20 mm nominal size	cum	1529	1529
M-054	Aggregates 25 mm nominal size	cum	1470	1470
M-055	Aggregates 40 mm nominal size	cum	1411	1411
Sl. No.	**Description**		**Unit**	**Rate**
M-056	G.I. pipe 100 mm dia		metre	1210
M-057	Acrylic polymer bonding coat		litre	321
M-058	Alluminium Paint as per market rate		litre	346
M-059	Aluminium alloy plate 2mm Thick as per market rate		sqm	506
M-060	Aluminium alloy/galvanised steel as per market rate		tonne	96331
M-061	Aluminium sheeting fixed with encapsulated lens type reflective sheeting including 2% towards lettering, cost of angle iron, cost of drilling holes, nuts, bolts etc.and signs as applicable as per market rate		sqm	618
M-062	Aluminium studs 100 x 100 mm fitted with lense reflectors		nos	515
M-062	Barbed wire as per market rate		kg	99
M-063	Bearing (Cost of parts) as per market rate		nos	141144
M-064	Bearing (Cast steel rocker bearing assembly of 250 tonne) as per market rate		nos	209952
M-065	Bearing (Elastomeric bearing assembly consisting of 7 internal layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation,)as per market rate		nos	16937
M-066	Bearing (Forged steel roller bearing of 250 tonne)as per market rate		nos	262440
M-067	Bearing (Pot type bearing assembly consisting of a metal piston supported by a disc, PTFE pads providing sliding surfaces against stainless steel mating together with cast steel assemblies/fabricated structural steel assemblies duly painted with all components as per market rate		nos	81511
M-068	Bearing (PTFE sliding plate bearing assembly of 80 tonnes)as per market rate		nos	21078
M-069	Bearing (Supply of sliding plate bearing of 80 tonne)as per market rate		nos	14781
M-070	Bentonite as per market rate		kg	19
M-071	Binding wire		kg	93
M-073	Bitumen (VG-40 Grade) - Bongaigaon		tonne	40000.00
M-074	Bitumen (VG-40 Grade) - Bongaigaon		tonne	40000.00
M-076	Bitumen (emulsion) - Bongaigaon		tonne	33000.00
M-077	Bitumen (VG-40 Grade) - Bongaigaon		tonne	40000.00
M-084	Brick as per market rate		each	8
M-085	C.I.shoes for the pile		kg	99
M-086	Cement as per market rate		tonne	8939
M-087	TMT bars (HYSD Bars) average rate		tonne	44000.00
M-090	Coller for joints 300 mm dia as per market rate		nos	692
M-091	Compressible Fibre Board(20mm thick)		sqm	1976
M-092	Connectors/ Staples as per market rate		each	87
M-093	Copper Plate(12m long x 250mmwide)		kg	315
M-094	Corrosion resistant Structural steel as per market rate		tonne	65209
M-095	Corrugated sheet, 3 mm thick, "Thrie" beam section railing as per market rate		kg	99

M-096	Credit for excavated rock found suitable for use as per market rate	cum	371
M-097	Curing compound as per market rate	litre	371
M-091	Delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	957
M-098	Earth Cost or compensation for earth taken from private land as per market rate	cum	49
M-099	Elastomeric slab seal expansion joint assembly manufactured by using chloroprene, elastomer for elastomeric slab unit conforming to clause 915.1 of IRC: 83 (part II), as per market rate	metre	16673
M-100	Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	100 nos	461
M-102	Epoxy compound with accessories for preparing epoxy mortar	kg	957
M-103	Epoxy mortar	kg	679
M-104	Epoxy primer as per market rate	kg	618
M-101	Epoxy resin-hardner mix for prime coat	kg	1328
M-105	Flag of red color cloth 600 x 600 mm as per market rate	each	22
M-106	Flowering Plants as per market rate	each	68
M-107	Galvanised MS flat clamp as per market rate	nos	494
M-108	Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size as per market rate	sqm	355
M-109	Galvanised structural steel plate 200 mm wide, 6 mm thick, 24 m long as per market rate	kg	111
M-110	Gelatin 80%	kg	132
M-111	Geo grids(TGB-40) as per market rate	sqm	279
M-112	Geomembrane(1.5mm thick) as per market rate	sqm	389
M-113	Geonets(Geonet 121) as per market rate	sqm	362
M-114	Geotextile(GNW-280) as per market rate	sqm	135
M-115	Geotextile filter fabric(GNW-280) as per market rate	sqm	158
M-116	GI bolt 10 mm Dia	nos	15
M-117	Grouting pump with agitator as per market rate	hour	420
M-118	Grass (Doob) as per market rate	kg	27
M-119	Grass (Fine) as per market rate	kg	37
M-120	HDPE pipes 75mm dia	metre	222
M-121	HDPE pipes 90mm dia	metre	272
M-122	Hedge plants as per market rate	each	15
M-123	Helical pipes 600mm diameter as per market rate	metre	173
M-124	Hot applied thermoplastic compound as per market rate	litre	159
M-125	HTS strand	tonne	148201
M-126	Joint Sealant Compound as per market rate	kg	722
M-127	Jute netting, open weave, 2.5 cm square opening for seeding and Mulching as per market rate	sqm	33
M-128	LDO for steam curing	litre	43
M-129	M.S. Clamps	nos	31
M-130	M.S. Clamps	kg	71
M-131	M.S.shoes @ 35 Kg per pile of 15 m	kg	77
M-132	Mild Steel bars as per market rate	tonne	56458

M-133	Modular strip/box seal expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm assembly comprising of edge beams, central beam,2 modules chloroprene seal, anchorage elements, support and control system, all steel	metre	166726
M-134	Modular strip/box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm box/box seal joint assembly containing 3 modules/cells and comprising of edge beams, two central beams, chloroprene seal, anchorage elements, support and	metre	221390
M-135	Nipples 12mm	nos	34
M-136	Nuts and bolts as per market rate	kg	88
M-137	Paint as per market rate	litre	185
M-138	Pavement Marking Paint as per market rate	litre	173
M-139	Paving Fabric(1.5mm thick) as per market rate	sqm	370
M-140	Perforated geosynthetic pipe 150 mm dia as per market rate	metre	524
M-141	Perforated pipe of cement concrete, internal dia 100 mm as per market rate	metre	149
M-142	Pesticide as per market rate	kg	395
M-143	Pipes 200 mm dia, 2.5 m long for drainage as per market rate	metre	987
M-144	Plastic sheath, 1.25 mm thick for dowel bars as per market rate	sqm	43
M-145	Plastic tubes 50 cm dia, 1.2 m high as per market rate	nos	93
M-146	Polymer braids as per market rate	metre	28
M-147	Pre moulded Joint filler,25 mm thick for expansion joint as per market rate	sqm	926
M-148	Pre-coated stone chips of 13.2 mm nominal size	cum	8028
M-149	Pre-moulded asphalt filler board	sqm	1050
M-150	Pre-packed cement based polymer concrete of strength 45 Mpa at 28 days	kg	99
M-151	Primer as per market rate	kg	185
M-152	Quick setting compound as per market rate	kg	43
M-153	Random Rubble Stone	cum	803
M-157	Reflectorising glass beads as per market rate	kg	148
M-158	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Copper Strips) as per market rate	metre	1294
M-159	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Galvanised carbon steel strips) as per market rate	metre	290
M-160	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Glass reinforced polymer/fibre reinforced polymer/polymeric strips) as per market rate	metre	776
M-161	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Stainless steel strips) as per market rate	metre	776
M-162	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. Aluminium strips) as per market rate	metre	580
M-163	Rivets as per market rate	each	5
M-164	Sand bags (Cost of sand and Empty cement bag) as per market rate	nos	25
M-165	Sapling 2 m high 25 mm dia as per market rate	each	111
M-166	Scrap tyres of size 900 x 20 as per market rate	nos	49
M-167	Seeds as per market rate	kg	74
M-168	Selected earth as per market rate	cum	373
M-169	Separation Membrane of impermeable plastic sheeting 125 micron thick as per market rate	sqm	40
M-170	Sheathing duct	metre	100
M-171	Shrubs as per market rate	each	25
M-172	Sludge / Farm yard manure @ 0.18 cum per 100 sqm at site of work for turfing as per market rate	cum	99

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M-174	Sodium vapour lamp (250 Watts) as per market rate	each	11115
M-175	Square Rubble Coursed Stone	cum	1074
M-176	Steel circular hollow pole of standard specification for street lighting to mount light at 5 m height above deck level as per market rate	each	8233
M-177	Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level as per market rate	each	11762
M-178	Steel drum 300 mm dia 1.2 m high/empty bitumen drum as per market rate	nos	73
M-179	Steel helmet and cushion block on top of pile head during driving.	kg	59
M-180	Steel pipe 25 mm external dia as per IS:1239 as per market rate	metre	114
M-181	Steel pipe 50 mm external dia as per IS:1239 as per market rate	metre	204
M-182	Steel wire rope 20 mm as per market rate	kg	155
M-183	Steel wire rope 40 mm as per market rate	kg	266
M-184	Strip seal expansion join	metre	9998
M-185	Structural Steel as per market rate	tonne	60000
M-186	Super plastisizer admixture IS marked as per 9103-1999 as per market rate	kg	167
M-187	Synthetic Geogrids as per clause 3102.8 and approved design and specifications.(TGU-150) as per market rate	sqm	446
M-188	Through and bond stone	each	7
M-189	Tie rods 20mm diameter as per market rate	nos	61
M-190	Tiles size 300 x 300 mm and 25 mm thick as per market rate	each	75
M-191	Timber	cum	31347
M-192	Traffic cones with 150 mm reflective sleeve as per market rate	nos	1853
M-193	Tube anchorage set complete with bearing plate, permanent wedges etc as per market rate	nos	2100
M-194	Unstaked lime	tonne	9571
M-195	Water as per market rate	KL	56
M-197	Water based cement paint as per market rate	litre	49
M-198	Welded steel wire fabric as per market rate	kg	78
M-199	Wire mesh 50mm x 50mm size of 3mm wire	kg	74
M-200	Wooden ballies 2" Dia for bracing as per market rate	each	303
M-201	Wooden ballies 8" Dia and 9 m long as per market rate	each	4755
M-202	Wooden packing as per market rate	cum	34642
M-203	Wooden staff for fastening of flag 25 mm dia, 1.0 m long as per market rate	each	99

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	Overheads for Road Works	8%		As the cost of road works exceeds 50crores overhead considered 8%			
	Contractors profit for Road Works	10%					
	Overheads for Bridge Works	0.25		for input of Overheads or Contractors profit please type in column C as like below			
	Overheads for Bridge Works (Rehabilitation)	0.3		Type symble of apostrope(') then input value then one space then symble of percentage (%) for example '08 %			
	Contractors profit for Bridge Works	0.1					
	Lead from Mixing Plant to working site	3	km				
	Lead for E/W borow area to site	3	km				
	Lead for fly ash from source to site	3	km				

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Items No.	Summary of Rates calculated and used for analysis of rates of other items	Unit	Rate
Item 8.3	Printing new letter and figures of any shade (ii) English Roman	per cm height per letter	0.50
Item 8.8	Painting Two Coats on New Concrete Surfaces	sqm	58.00
Item 8.9	Painting angle iron post two coats	sqm	52.00
Item 12.6 (B)	Cement mortor 1:2 (Excluding OH & CP)	cum	7256.00
Item 12.6 (A)	Cement mortor 1:3 (Excluding OH & CP)	cum	5945.00
Item 12.6 (D)	Cement mortor 1:6 (Excluding OH & CP)	cum	4298.00
Item 12.7 (A)	Course Rubble masonary in cement mortor 1:3 (including OH & CP)	cum	5309.00
Item 12.7 (B)	Random Rubble masonary in cement mortor 1:6 (including OH & CP)	cum	4830.00
Item 12.8 (A)	PCC Grade M15 including OH & CP for Open Foundation by Mixer	cum	7004.00
Item 12.8 (A)	PCC Grade M15 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	4899.00
Item 12.8 (B) PCC	PCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	5438.00
Item 12.8 (C)	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	5510.00
Item 12.8 (C) RCC	RCC Grade M20 including OH & CP for Open Foundation by Batching Plant	cum	7693.00
Item 12.8 (C)	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	5380.00
Item 12.8 (D)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	5933.00
Item 12.8 (D)	PCC Grade M25 including OH & CP for Open Foundation by Batching Plant	cum	8282.00
Item 12.8 (D)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	5806.00
Item 12.8 (E)	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	6011.00
Item 12.8 (E)	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	6224.00
Item 12.8 (F)	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	5986.00
Item 12.8 (F)	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	5855.00
Item 12.8 (G)	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	6041.00
Item 12.8 (G)	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	6255.00
Item 12.8 (H) Case I	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	6178.00
Item 12.8 (H) Case II	RCC Grade M35 including OH & CP for Open Foundation by Batching Plant	cum	9053.00
Item 12.8 (H)	RCC Grade M35 excluding OH & CP for Open Foundation by Batching Plant	cum	6874.00
Item 12.8 (H)	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	6674.00

Item 12.11 (C) i	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	6028.00
Item 12.11 (C) i	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	6134.00
Item 12.11 (C) ii	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	6323.00
Item 12.11 (C) ii	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	6427.00
Item 12.11 (C) iii	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	6377.00
Item 12.11 (C) iii	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	6484.00
Item 12.11 (C) iv	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	6502.00
Item 12.11 (C) iv	PCC Grade M35 including OH & CP for Well Foundation (Bottom Plug) by Batching Plant	cum	9490.00
Item 12.11 (C) iv	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	6606.00
Item 12.11 (F) iv	PCC Grade M35 including OH & CP for Well Foundation (Well Cap) by Batching Plant	cum	9053.00
Item No. 3.13	Excavation for Structures (Manual Means)	cum	158.00
Item No. 3.13	Excavation for Structures (Mechenical Meanse)	cum	44.00
Item 14.1(A)	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	9352.00
Item 14.1(B)	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	10219.00
Item 14.1(E)	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	11446.16
Item 14.1(C)	RCC Grade M30 for super-structure including formwork and excluding OH & CP by Batching Plant	cum	7514.00
Item 14.1(C)	RCC Grade M30 for super-structure excluding formwork and excluding OH & CP by Batching Plant	cum	6261.00
Item 14.2 A	Supplying ,fitting and placing HYSD bar reinforcement in super-structure exncluding OH & CP	tonne	49368.00
Item 13.6	Supplying, fitting and placing HYSD including OH & CP for sub-structure	tonne	66780.00
Item 5.17	Fog Seal	sqm	31.00
Item 5.21 Case-I	Crack Prevention courses. Case-I Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm	63.00
Item 5.21 Case-II	Crack Prevention courses. Case-II Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm	74.00
Item 5.21 Case-IV	Crack Prevention courses. Case-III Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %	sqm	97.00
Item 5.21 Case-IV	Crack Prevention courses. Case-IV Bitumen Impregnated Geotextile	sqm	229.00
Item 5.15 Case-I	Slurry Seal Case-I 5 mm thickness	sqm	63.00
Item 5.15 Case-II	Slurry Seal Case-II 3 mm thickness	sqm	41.00
Item 5.15 Case-III	Slurry Seal Case III 1.5 mm thickness	sqm	24.70
Item 5.9 Case-I	Surface Dressing Case-I 19 mm nominal chipping size	sqm	90.00
Item 5.9 Case-II	Surface Dressing Case-II 13 mm nominal size chipping	sqm	73.00

Summary

CHAPTER-1

CARRIAGE OF MATERIALS

Item No.	Descriptions	Unit	**Rate (in Rs.)**
1.1	Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum. (Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip)	cum	**92.00**
1.2	Loading and Unloading of Boulders by Manual Means	cum	**112.00**
1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking.	tonne	**162.00**
1.4	Cost of Haulage Excluding Loading and Unloading		
(i)	Surfaced Road	tonne.km	**4.00**
(ii)	Unsurfaced Gravelled Road	tonne.km	**4.80**
(iii)	Katcha Track and Track in river bed / nallah bed and choe bed.	tonne.km	**9.80**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
	CHAPTER-2		
	SITE CLEARANCE		
Item No.	Descriptions	Unit	**Rate (in Rs.)**
2.1	Cutting of Trees, including Cutting of Trunks, Branches and Removal (Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 mtrs and earth filling in the depression/pit.)		
(i)	Girth from 300 mm to 600 mm	each	**162.00**
(ii)	Girth from 600 mm to 900 mm	each	**315.00**
(iii)	Girth from 900 mm to 1800 mm	each	**575.00**
(iv)	Girth above 1800 mm	each	**1060.00**
2.2	Clearing Grass and Removal of Rubbish	hectare	**9865.00**
2.3	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	**30047.00**
B	In area of thorny jungle	hectare	**40363.00**
(ii)	By Mechanical Means		
A	In area of light jungle	hectare	**45871.00**
B	In area of thorny jungle	hectare	**55418.00**
2.4	Dismantling of Structures (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres)		
(i)	Lime /Cement Concrete		
I	By Manual Means		
A	Lime Concrete, cement concrete grade M-10 and below	cum	**255.00**
B	Cement Concrete Grade M-15 & M-20	cum	**295.00**
C	Prestressed / Reinforced cement concrete grade M-20 & above	cum	**737.00**
II	By Mechanical Means for items No. 202(b) & (c)		
A	Cement Concrete Grade M-15 & M-20	cum	**395.00**
B	Prestressed / Reinforced cement concrete grade M-20 & above	cum	**661.00**
(ii)	Dismantling Brick / Tile work		
A	In lime mortar	cum	**176.00**
B	In cement mortar	cum	**216.00**
C	In mud mortar	cum	**161.00**
D	Dry brick pitching or brick soling	cum	**153.00**
(iii)	Dismantling Stone Masonry		
A	Rubble stone masonry in lime mortar	cum	**192.00**
B	Rubble stone masonry in cement mortar.	cum	**216.00**
C	Rubble Stone Masonry in mud mortar.	cum	**176.00**
D	Dry rubble masonry	cum	**169.00**
E	Dismantling stone pitching/ dry stone spalls.	cum	**161.00**
F	Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.	cum	**176.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
(iv)	Wood work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level	cum	**429.00**
(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	**1028.00**
B	Excluding dismembering.	tonne	**752.00**
C	Extra over item No(V) A and(V) B for cutting rivets.	tonne	**8.20**
(vi)	Scraping of bricks dismantled from brick work including stacking.		
A	In lime/Cement mortar	1000 numbers	**691.00**
B	In mud mortar	1000 numbers	**247.00**
(vii)	Scraping of Stone from dismantled stone masonry		
A	In cement and lime mortar	cum	**278.00**
B	In Mud mortar	cum	**58.00**
(viii)	Scarping plaster in lime or cement mortar from brick/ stone masonry	sqm	**9.30**
(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	**102.00**
B	Above 600 mm to 900 mm dia	metre	**139.00**
C	Above 900 mm	metre	**238.00**
2.5	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	**467.00**
B	Granular courses	cum	**346.00**
II	By Mechanical Means		
A	Bituminous course	cum	**240.00**
2.6	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	**994.00**
2.7	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	**52.00**
2.8	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	**12.00**
2.9	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	**18.00**
2.10	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	**255.00**
B	Ordinary KM Stone	each	**144.00**
C	Hectometre Stone	each	**28.80**
2.11	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	**32.90**
2.12	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	**88.00**
2.13	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	**140.00**
2.14	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	**117.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
	CHAPTER-3		
	EARTH WORK, EROSION CONTROL AND DRAINAGE		
Item No.	Descriptions	Unit	**Rate (in Rs.)**
3.1	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.)		
(i)	Including Royality @ Rs. 15.0 per cum but excluding the cost of watering, rolling & compaction	cum	**149.00**
(ii)	Including Royality @ Rs. 15.0 per cum , cost of watering, rolling & compaction	cum	**166.00**
Note	In case there is a situation where the cross-section is of cut and fill and cut earth is required to be used in embankment in the immediate vicinity, the item of carriage in the truck shall be omitted. inclunding Royality @ Rs. 15.00 per cum.	cum	**98.00**
3.2 (i)	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) including royality @ Rs. 15.00 per cum but excluding cost of watering , rolling & compaction	cum	**190.00**
(ii)	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 including royality @ Rs. 15.00 per cum, cost of watering , rolling & compaction	cum	**207.00**
Note	In case there is a situation where the cross-section is of cut and fill and cut earth is required to be used in embankment in the immediate vicinity, the item of carriage in the truck shall be omitted - inclunding Royality @ Rs. 15.00 per cum.	cum	**139.00**
3.3	Excavation in Soil with Dozer with lead upto 100 metres (Excavation for road way in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 metres (average lead50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	**151.00**
3.4	Excavation in Ordinary Rock with Dozer with lead upto 100 metres (Excavation for roadway in ordinary rock by deploying a dozer, 80 HP including cutting and pushing the cut earth to site of embankment upto a distance of 100 metres (average lead 50 metres), trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.	cum	**253.00**
3.5	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 metres)	cum	**521.00**
3.6	Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with disposal upto 1000 metres. (Excavation for roadwork in soil with hydraulic excavator of0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m)		
(i)	Including Royality @ Rs. 15.00 per cum but excluding the cost of watering, rolling & compaction.	cum	**83.00**
(ii)	Including Royality @ Rs. 15.00 per cum, cost of watering, rolling & compaction.	cum	**98.00**
3.7	Excavation in Ordinary Rockusing Hydraulic ExcavatorCK-90 and Tippers with disposal upto 1000 metres. (Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site within all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)		
(i)	Including Royality @ Rs. 15.00 per cum but excluding the cost of watering, rolling & compaction.	cum	**101.00**
(ii)	Including Royality @ Rs. 15.00 per cum, cost of watering, rolling & compaction.	cum	**117.00**
3.8	Excavation in Hard Rock (blasting prohibited) (Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)		
A	Mechanised	cum	**261.00**
B	Manual Method	cum	**658.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
3.9	Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres (Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres)	cum	**99.00**
3.10	Excavation in Marshy Soil (Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 metres, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections.)		
(i)	Including Royality @ Rs. 15.00 per cum but excluding the cost of watering, rolling & compaction.	cum	**90.00**
(ii)	Including Royality @ Rs. 15.00 per cum, cost of watering, rolling & compaction.	cum	**107.00**
3.11	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 305.)	cum	**60.00**
3.12	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 spaced drill holes, collection of the excavated rock by a 80 HP 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 clause No. 303)	sqm	**120.00**
3.13	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.)		
(i)	Ordinary soil		
A	Manual Means (Depth upto 3 m)	cum	**158.00**
B	Mechanical Means (Depth upto 3 m)	cum	**44.00**
(ii)	Ordinary rock (not requiring blasting)		
A	Manual Means (Depth upto 3 m)	cum	**197.00**
B	Mechanical Means	cum	**59.00**
(iii)	Hard rock (requiring blasting)		
A	Manual Means	cum	**374.00**
(iv)	Hard rock (blasting prohibited)		
A	Mechanical Means	cum	**495.00**
(v)	Marshy soil		
A	Manual means (upto 3 m depth)	cum	**540.00**
B	Mechanical Means	cum	**320.00**
3.14	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.)	sqm	**17.40**
3.15	Scarifying existing bituminous surface to a depth of 50 mm by mechanical means (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	**4.20**
3.16	Embankment Construction with Material Obtained from Borrow Pits (Construction of embankment with approved material 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)		
(i)	Rolling with vibratory roller	cum	**266.00**
(ii)	Rolling with smooth wheeled roller	cum	**641.00**
3.17	Construction of Embankment with Material Deposited from Roadway Cutting (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)		
(i)	Rolling with vibratory roller	cum	**139.00**
(ii)	Rolling with smooth wheeled roller	cum	**130.00**
3.18	Construction of Subgrade and Earthen Shoulders (Construction of subgrade and earthen shoulders with approved material 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)		
(i)	Rolling with vibratory roller	cum	**322.00**
(ii)	Rolling with smooth wheeled roller	cum	**717.00**
3.19	Compacting Original Ground		
Case-I	Compacting original ground supporting subgrade (Loosening of the ground upto a level of 500 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of table 300-2 for subgrade construction.)		
(i)	Rolling with vibratory roller	cum	**73.00**
(ii)	Rolling with smooth wheeled roller	cum	**63.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
Case-II	Compacting original ground supporting embankment		
(i)	Rolling with vibratory roller	cum	**38.00**
(ii)	Rolling with smooth wheeled roller	cum	**28.00**
3.20	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)	cum	**143.00**
3.21	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.)	cum	**91.00**
3.22	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)	sqm	**31.00**
3.23	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	**126.00**
3.24	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 of50 metres (average lead 25 metres))		
A	Mechanical means	metre	**69.00**
B	Manual Means	metre	**39.00**
3.25	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	**139.00**
B	Manual Means	metre	**59.00**
3.27	Sub Surface Drains with Perforated Pipe (Construction of subsurface 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	**554.00**
3.28	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	**219.00**
3.29	Underground Drain at Edge of Pavement (Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab10 cm in thickness on urban roads)	metre	**3874.00**
3.30	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	**2.00**
3.31	Construction of Rock fill Embankment (Construction of rock fill embankment with broken hard rock fragments 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	**65.00**
3.32	Excavation in Hill Area in Soil by Mechanical Means (Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres)	cum	**157.00**
3.33	Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting. (Excavation in hilly area in ordinary rock not requiring ballasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres)	cum	**230.00**
3.34	Excavation in Hilly Areas in Hard Rock Requiring Blasting (Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.)	cum	**286.00**
3.36	Embankment Construction with Fly ash/Pond ash available from coal or lignite burning Thermal Plants as waste material. (Construction of embankment with fly ash conforming to table 1 of IRC: SP: 58 - 2001 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: 58-2001 and as per approved plans.)	cum	**460.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
	CHAPTER-4		
	SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS		
Item No.	Descriptions	Unit	**Rate (in Rs.)**
4.1	Granular Sub-base with Close Graded Material (Table:- 400-1)		
A	Plant Mix Method (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	**2322.00**
(ii)	for grading- II Material	cum	**2384.00**
(iii)	for grading-III Material	cum	**2235.00**
B	By Mix in Place Method (Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)		
(i)	for grading- I Material	cum	**2162.00**
(ii)	for grading- II Material	cum	**2224.00**
(iii)	for grading-III Material	cum	**2075.00**
4.2	Granular Sub-Base with Coarse Graded Material (Table:- 400- 2) (Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)		
(i)	for grading- I Material	cum	**2264.00**
(ii)	for grading- II Material	cum	**2341.00**
(iii)	for grading-III Material	cum	**2261.00**
4.3	Lime Stabilisation for Improving Subgrade (Laying and spreading available soil in the subgrade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 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)		
A	By Mechanical Means	cum	**757.00**
B	By Manual Means	cum	**728.00**
4.4	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.)	cum	**1295.00**
4.5	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.)	cum	**985.00**
4.6	Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4 in Sub base/ Base (Providing, laying and spreading Material on a 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	**3479.00**
(ii)	For Base course	cum	**3073.00**
4.7	Making 50 mm x 50 mm Furrows (Making 50 mm x 50 mm furrows, 25mm deep, 450 to the center line of the road and at one metre interval in the existing thin bituminous wearing coarse including sweeping and disposal of excavated material within 1000 metres lead)		
	i) 25 mm deep furrow cutting	sqm	**2.30**
	ii) 50 mm deep furrow cutting	sqm	**4.60**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
4.8	Inverted Choke (Construction of inverted choke by providing, laying, spreading and compacting screening B type/ coarse sand of specified grade in uniform layer on a prepared surface with motor grader and compacting with power roller etc)	cum	**1766.00**
Not considered	For moorum or gravel	cum	**1069.00**
	For Koilwar sand	cum	**1766.00**
Not considered	For Doriganj sand	cum	**1766.00**
Not considered	For local sand	cum	**1934.00**
4.9	Water Bound Macadam (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.)		
A	By Manual Means		
(i)	Grading- I (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)	cum	**2513.00**
	With Smooth 3 wheeled Steel Roller	cum	**2507.00**
(b)	Using Screening Type-A (13.2mm Agg.) (with Vibratory Roller)	cum	**2843.00**
	With Smooth 3 wheeled Steel Roller	cum	**2836.00**
(ii)	Grading- II (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)	cum	**2592.00**
	With Smooth 3 wheeled Steel Roller	cum	**2586.00**
(b)	Using Screening Type-A (13.2mm Agg.) (with Vibratory Roller)	cum	**2720.00**
	With Smooth 3 wheeled Steel Roller	cum	**2714.00**
(c)	Using Screening Type-B (11.2mm Agg.) (with Vibratory Roller)	cum	**2902.00**
	With Smooth 3 wheeled Steel Roller	cum	**2848.00**
(iii)	Grading- III (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)	cum	**2677.00**
	With Smooth 3 wheeled Steel Roller	cum	**2670.00**
(b)	Using Screening Type-B (11.2mm Agg.) (with Vibratory Roller)	cum	**2938.00**
	With Smooth 3 wheeled Steel Roller	cum	**2932.00**
B	By Mechanical Means:		
(i)	Grading- I (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)	cum	**2447.00**
	With Smooth 3 wheeled Steel Roller	cum	**2440.00**
(b)	Using Screening Type-A (13.2mm Agg.) (with Vibratory Roller)	cum	**2776.00**
	With Smooth 3 wheeled Steel Roller	cum	**2770.00**
(ii)	Grading- II (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)	cum	**2526.00**
	With Smooth 3 wheeled Steel Roller	cum	**2520.00**
(b)	Using Screening Type-A (13.2mm Agg.) (with Vibratory Roller)	cum	**2653.00**
	With Smooth 3 wheeled Steel Roller	cum	**2647.00**
(c)	Using Screening Type-B (11.2mm Agg.) (with Vibratory Roller)	cum	**2836.00**
	With Smooth 3 wheeled Steel Roller	cum	**2781.00**
(iii)	Grading- III (Using Screening Crushable type such as Moorum or Gravel)		
(a)	Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)	cum	**2610.00**
	With Smooth 3 wheeled Steel Roller	cum	**2604.00**
(b)	Using Screening Type-B (11.2mm Agg.) (with Vibratory Roller)	cum	**2872.00**
	With Smooth 3 wheeled Steel Roller	cum	**2866.00**
4.10	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 400.7 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.)		
	With Vibratory Roller	cum	**746.00**
	With Smooth 3 wheeled Steel Roller	cum	**739.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
4.11	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	**31.70**
4.12	Wet Mix Macadam (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)		
	With Vibratory Roller	cum	**2350.00**
	With Smooth 3 wheeled Steel Roller	cum	**2932.00**
4.13	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	**192.00**
4.14	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 407)	cum	**259.00**
4.16	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.)	sqm	**1654.00**
4.17	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 clause 410 to form a layer of sub-base/Base)		
A	By Mix in Place Method		
(i)	For 53 mm maximum size	cum	**2432.00**
(ii)	For 45 mm maximum size	cum	**2449.00**
B	By Mixing Plant :		
(i)	For 53 mm maximum size	cum	**3126.00**
(ii)	For 45 mm maximum size	cum	**3148.00**
4.18	Lime, Fly ash stabalised soil sub-base (Construction of Sub-base using lime - fly ash admixture with granular soil, free from organic matter/ deleterious material or clayey silts and low plasticity clays having PI between 5 and 20 and liquid limit less than 25 and commercial dry lime, slaked at site or pre-slaked with CaO content not less than 50%, fly ash to conform to gradation as per clause 4.3 of IRC: 88-1984, lime + fly ash content ranging between 10 to 30%, the minimum un-confined compressive strength and CBR value after 28 days curing and 4 days soaking to be 7.5 kg/sq, cm and 25% respectively, all as specified in IRC: 88-1984)	cum	**1234.00**

Item No.	Descriptions	Unit	Rate (in Rs.)
	CHAPTER-5		
	BASES AND SURFACE COURSES (BITUMINOUS)		
Item No.	Descriptions	Unit	Rate (in Rs.)
5.1	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	**25.00**
5.2	Tack coat		
	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	**9.00**
5.3	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction)		
(i)	for Grading I (40 mm nominal size)	cum	**7471.00**
(ii)	for GradingII(19 mm nominal size)	cum	**7471.00**
5.4	Bituminous Penetration Macadam (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction)		
A	50 mm thick	sqm	**390.00**
B	75 mm thick	sqm	**533.00**
5.5	Built-Up-Spray Grout (Providing, laying and rolling of built-up-spray grout layer over prepared base consisting of a two layer composite construction of compacted crushed coarse aggregates using motor grader for aggregates. key stone chips spreader may be used with application of bituminous binder after each layer, and with key aggregates placed on top of the second layer to serve as a Base conforming to the line, grades and cross-section specified, the compacted layer thickness being 75 mm)	sqm	**373.00**
5.6	Dense Graded Bituminous Macadam (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of 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. 507 complete in all respects.)		
(i)	for Grading I (40 mm nominal size)	cum	**5986.00**
(ii)	for GradingII(19 mm nominal size)	cum	**8967.00**
5.7	Semi - Dense Bituminous Concrete (Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects)		
(i)	for Grading I (13 mm nominal size)	cum	**9646.00**
(ii)	for GradingII(10 mm nominal size)	cum	**10158.00**
5.8	Bituminous Concrete (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of 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. 509 complete in all respects)		
(i)	for Grading-I (13 mm nominal size)	cum	**7119.00**
(ii)	for Grading-II(10 mm nominal size)	cum	**10230.00**
5.9	Surface Dressing (Providing and laying surface dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller)		
Case -1	19 mm nominal chipping size	sqm	**90.00**
Case - II	13 mm nominal size chipping	sqm	**73.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
5.10	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 or cut-back or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades.)		
(i)	Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .	sqm	**151.00**
(ii)	Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion	sqm	**63.00**
5.11	Close Graded Premix Surfacing/Mixed Seal Surfacing (Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour. Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-a) or 13.2 mm to 0.09 mm (Type-b) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.)		
	i) For Type A	sqm	**184.00**
	i) For Type B	sqm	**172.00**
5.12	Seal Coat (Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats)		
(i)	Case - I : Type A	sqm	**66.00**
(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 of suitable grade.)	sqm	**54.00**
5.13	Supply of Stone Aggregates for Pavement Courses (Supply of stone aggregates from approved sources confirming to the physical requirement, specified in the respective specified clauses, including royalties, fees rents, collection, transportation, stacking and testing and measured in cum as per clause 514.5 Competitive market rates to be ascertained. Alternatively, rates for stone crushing given in chapter 1may be adopted, if found economical. In case for supply of aggregates at site are not available, nearest crusher site may be ascertained. Loading and un-loading charges and cost of carriage may be added to these rates to arrive at the cost at site.)	cum	
5.14	Mastic Asphalt (Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-29, 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 1000C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm	**1117.00**
5.15	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)	sqm	
(i)	5 mm thickness	sqm	**63.00**
(ii)	3 mm thickness	sqm	**41.00**
(iii)	1.5 mm thickness	sqm	**24.70**
5.16	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 and compacting to the required grade, level and thickness, all as specified in clause 517.)	cum	**7210.00**
5.17	Fog Spray	sqm	**31.00**
added	1.In case it is decided by the engineer to blind the fog spray, the following may be added	sqm	**7.70**
5.18	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 capacity, transporting, laying, compacting and finishing to specified grades and levels.)		
(i)	Using bitumen emulsion and 9.5 mm or 13.2 mm nominal size aggregate	cum	**10624.00**
(ii)	Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate	cum	**10627.00**
(iii)	Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate	cum	**3820.00**
(iv)	Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate	cum	**3816.00**
5.19	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 capacity, transporting, laying, compacting and finishing.)	cum	**9155.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
5.21	Crack Prevention Courses		
(i)	Stress Absorbing Membrane (SAM) crack width less than 6 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width below 6 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, 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.)	sqm	**63.00**
(ii)	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, 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	**74.00**
(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 clause 521, 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	**97.00**
(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 704.3, 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 704.4.5)	sqm	**229.00**
5.22	Recipe Cold Mix (Providing and laying of premix of crushed stone aggregates and emulsion binder, mixed in a batch type cold mixing plant, 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 519.3)		
(i)	75 mm thickness	cum	**7219.00**
(ii)	40 mm thickness	cum	**9582.00**
(iii)	25 mm thickness	cum	**10440.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
	CHAPTER-6		
	CEMENT CONCRETE PAVEMENTS		
Item No.	Descriptions	Unit	**Rate (in Rs.)**
6.1	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.)	cum	**4676.00**
6.2	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)	cum	**9931.00**
6.3	Rolled Cement Concrete Base (Construction of rolled cement concrete base course with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm with minimum, aggregate cement ratio15:1 and minimum cement content of 200 kg/cum, aggregate gradation to be as per table 600-4 after blending, mixing in batching plant at optimum moisture content, transporting to site, laying with a paver with electronic sensor, compacting with 8-10 tonnes smooth wheeled vibratory roller to achieve, the designed flexural strength, finishing and curing.)	cum	**5208.00**
6.4	Transition section between rigid and flexible pavement (Due to change in the properties of materials and type of construction, a gradual changeover from rigid pavement to flexible pavement is desirable to avoid any damage at the butting joint. After provision of an expansion joint in the cement concrete slab, the thickness of slab should be tapered to 10 cm over a length of 3 m towards the flexible pavement. The deficiency of thickness caused due to tapering of the slab should be made up by the asphaltic layers.)		
6.5	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	**4523.00**
6.6	Cement - Fly ash concrete pavement. (Construction reinforced-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub 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)	cum	**9421.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-7

GEOSYNTHETICS AND REINFORCED EARTH

Item No.	Descriptions	Unit	**Rate (in Rs.)**
7.1	Sub- Surface Drain with Geotextiles (Construction of sub surface drain 200 mm dia using geotextiles treated with carbon black with physical properties as given in clause 702.2.3 formed in to a stable network and a planar geocomposite structure, joints wrapped with geotextile to prevent ingress of soil, all as per clause 702 and approved drawings including excavation and backfilling)	metre	**1416.00**
7.2	Narrow Filter Sub- Surface Drain (Construction of a narrow filter sub- surface drain consisting of porous or perforated pipe laid in narrow trench surrounded by a geotextile filter fabric, with a minimum of 450 mm overlap of fabric and installed as per clause 702.3 and 309.3.5 including excavation and backfilling)	metre	**1053.00**
7.3	Laying Paving Fabric Beneath a Pavement Overlay (Providing and laying paving fabric with physical requirements as per table 704-2 over a tack coat of paving grade Bitumen 80-100 penetration, laid at the rate of 1 kg per sqm over thoroughly cleaned and repaired surface to provide a water resistant membrane and crack retarding layer. Paving fabric to be free of wrinkling and folding and to be laid before cooling of tack coat, brooming and rolling of surface with pneumatic roller to maximise paving fabric contact with pavement surface)	sqm	**512.00**
7.4	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 704.2, 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 704.3. filled with stone with minimum size of 200 mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundation recess in case of sloping ground and laid over a layer of geotextile to prevent migration of fines, all as per clause 704 and laid as per clause 2503.3 and approved design.)	cum	**1329.00**
7.5	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.)		
(i)	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	**381.00**
Type 2	2.Copper Strips	metre	**1684.00**
Type 3	3.Aluminium Strips	metre	**757.00**
Type 4	4.Stainless steel strips	metre	**1012.00**
Type 5	5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips	metre	**1012.00**
B	With reinforcing elements of synthetic geogrids	sqm	**590.00**
(ii)	Facing elements of RCC	sqm	**1529.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-8

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	Descriptions	Unit	**Rate (in Rs.)**
8.1	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, all complete as per clause 408)		
A	Using Concrete Mixer	metre	**362.00**
B	Using Concrete Batching and Mixing Plant	metre	**363.00**
8.2	Cast in Situ Cement Concrete M 20 Kerb with Channel (Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on 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, all complete as per clause 408)		
A	Using Concrete Mixer	metre	**682.00**
B	Using Concrete Batching and Mixing Plant	metre	**688.00**
8.3	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)	cm height per letter	**0.80**
(ii)	English and Roman	cm height per letter	**0.50**
8.4	Retro- reflectorised Traffic signs (Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing)		
(i)	90 cm equilateral triangle	each	**2589.00**
(ii)	60 cm equilateral triangle	each	**2447.00**
(iii)	60 cm circular	each	**2540.00**
(iv)	80 mm x 60 mm rectangular	each	**2684.00**
(v)	60 cm x 45 cm rectangular	each	**2530.00**
(vi)	60 cm x 60 cm square	each	**2596.00**
(vii)	90 cm high octagon	each	**2825.00**
8.5	Direction and Place Identification signs upto 0.9 sqm size board. (Providing and erecting direction and place identification retro-reflectorised sign asper IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing)	sqm	**3335.00**
8.6	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 encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing)	sqm	**3831.00**
8.7	Overhead Signs (Providing and erecting overhead signs with a corrosion resistant aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type 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)		
A	Truss and Vertical Support	tonne	**142869.00**
B	Aluminium alloy plate for over head sign	tonne	**679.00**
8.8	Painting 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	**58.00**
8.9	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	**52.00**
8.10	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	**59.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
8.11	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work (Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control)		
(i)	Over 10 cm in width	sqm	**85.00**
(ii)	Up to 10 cm in width	sqm	**72.00**
8.12	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work (Painting lines, dashes, arrows etc on roads in two coats on old work with ready mixed road marking paint confirming to IS: 164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control)		
(i)	Over 10 cm in width	sqm	**56.00**
(ii)	Up to 10 cm in width	sqm	**60.00**
8.13	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	**655.00**
8.14	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	**3970.00**
(ii)	Ordinary Kilometer stone (Precast)	each	**2473.00**
(iii)	Hectometer stone (Precast)	each	**635.00**
8.15	Road Delineators (Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide stripes, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and confirming toIRC-79 and the drawings.)	each	**1258.00**
8.16	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	**636.00**
8.17	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 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 807)	metre	**341.00**
8.18	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 807)	metre	**558.00**
8.20	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	**2062.00**
8.21	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) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing)	metre	**1532.00**
8.22	Reinforced Cement Concrete Crash Barrier (Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel 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 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified)		
(i)	M 20 grade concrete	metre	**3624.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
8.23	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, 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 810)	metre	**3572.00**
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, 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 810)	metre	**5370.00**
8.25	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 gradecementconcretefoundation2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 450 inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement concrete.)	metre	**3673.00**
8.26	Anti - Glare Devices in Median		
B	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	**3078.00**
C	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	**1050.00**
8.27	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 and fixed firmly in concrete foundation.)		
(i)	For Fixing in Median	each	**29043.00**
(ii)	For fixing in Footpath	each	**28985.00**
8.28	Lighting on Bridges (Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp)	each	**23524.00**
8.29	Cable Duct Across the Road (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 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:98-1997, 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 - 1997 and approved drawings.)		
(ii)	Double Row for two utility services	metre	**3854.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
8.30	Highway Patrolling and Traffic Aid Post (It is proposed to locate one Traffic Aid Post every 50-60 km of the highway.)		
8.31	Items related to under pass/ subway/ overhead bridge/ overhead foot bridge (The items involved for underpass/ subway/ overhead bridge/ overhead foot bridge are earthwork, plain cement concrete, plastering, painting, information sign etc. The rates for these items are available in respective chapters which can be adopted for the quantities derived from the approved designs and drawings)		
8.32	Traffic Control System and Communication system (Providing a traffic control centre and communication system including telecommunication facilities and related accessories, CCTV, radar, vehicle detection camera, central computer system These are specialised item of telecommunication system and are the commercial products. The designer is required to contact the manufacturers to ascertain market prices. In case of civil works required to be executed for these installations, pricing may be done as per rates in relevant chapters for quantities derived approved design and drawing.)		
8.33	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 802.3)		
(i)	Gantry Support System	tonne	**140833.00**
(ii)	Message Display (Message display board 6 sqm electronically operated with complete electronic fitments for flashing the pre-determined messages.)		
8.34	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	**1720.00**
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	**995.00**
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	**2645.00**
8.35	Road Markers/Road Stud with Lense Reflector (Providing and fixing of road stud 100x 100 mm, die cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973)	each	**677.00**
8.36	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	**2203.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
8.43	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	**3386.00**
8.44	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	**5351.00**
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	**7347.00**
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	**20137.00**
8.45	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	**355.00**
8.46	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)	each	**341.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-9
PIPE CULVERTS

Item No.	Descriptions	Unit	**Rate (in Rs.)**
9.1	PCC 1:3:6 in Foundation (Plain cement concrete 1:3:6 mix with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.)	cum	**5237.00**
9.2	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	**8004.00**
B	1200 mm dia	metre	**12989.00**
9.3	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	**16334.00**
B	1200 mm dia	metre	**26326.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-10

MAINTENANCE OF ROADS

Item No.	Descriptions	Unit	**Rate (in Rs.)**
10.1	Restoration of Rain Cuts (Restoration of rain cuts with soil, moorum, gravel or a mixture of these, clearing the loose soil, benching for 300 mm width, laying fresh material in layers not exceeding 250 mm and compacting with plate compactor or power rammers to restore the original alignment, levels and slopes)	cum	**99.00**
10.2	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	**54.00**
10.3	Maintenance of Earth Shoulder (stripping excess soil) (Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor)	sqm	**17.00**
10.4	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 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2)	sqm	**148.00**
10.5	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)		
(i)	for grading I Material	sqm	**391.00**
(ii)	for grading II Material	sqm	**392.00**
10.6	Crack Filling (Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.)	metre	**3.00**
10.7	Dusting (Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.)	sqm	**1.10**
10.8 A	Fog Seal (ref item 5.17)	sqm	**31.00**
B	Crack Prevention courses. (ref item 5.21)		
(i)	Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm	**63.00**
(ii)	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm	**74.00**
(iii)	Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %	sqm	**97.00**
(iv)	Bitumen Impregnated Geotextile	sqm	**229.00**
C	Slurry Seal (ref item 5.15)		
(i)	5 mm thickness	sqm	**63.00**
(ii)	3 mm thickness	sqm	**41.00**
(iii)	1.5 mm thickness	sqm	**24.70**
D	Surface Dressing for maintance works. (ref item 5.9)		
(i)	19 mm nominal chipping size	sqm	**90.00**
(ii)	13 mm nominal size chipping	sqm	**73.00**
10.9	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)	metre	**1351.00**
10.10	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)	metre	**104.00**
10.11	Hill Side Drain Clearance (Removal of earth from the choked hill side drain and disposing it on the valley side manually)	metre	**21.30**
10.12	Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)	cum	**77.00**
10.13	Land slide Clearance in Hard Rock Requiring Blasting (Clearing of land slide in hard rock requiring blasting for 50% of the boulders and disposal of the same on the valley side.)	cum	**122.00**
10.14	Snow Clearance on Roads with Dozer (Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side)	cum	**5.30**
10.15	Snow Clearance on Roads with Snow Blowers (Snow clearance from road surface by a snow blower and disposing on the valley side.)	cum	**2.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-11
HORTICULTURE

Item No.	Descriptions	Unit	**Rate (in Rs.)**
11.1	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	**13.20**
11.2	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	**39.20**
(ii)	In rows 7.5 cm apart in either direction	sqm	**74.10**
11.3	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	**51.60**
11.4	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	**180.00**
11.5	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	**54.80**
11.6	Maintenance of Lawns with Fine Grassing for the First Year	sqm	**191.00**
11.7	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	**162.00**
(b)	Maintenance of Hedge for one year	metre	**133.00**
11.8	a) Planting Flowering Plants and Shrubs in Central Verge	km	**56034.00**
(b)	Maintenance of Flowering Plants and Shrubs in Central Verge for one Year	km	**153446.00**
11.9	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	**744.00**
11.10	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	**11.00**
11.11	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	**117.00**
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	**2547.00**
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	**52.00**
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	**345.00**
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	**698.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
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	**9202.00**
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 two coats with paint of approved brand over a coat of priming, complete in all respects.)	each tree guard	**2333.00**
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 and steel wire3 mm dia welded and fabricated as per design in two halves bolted together)	each tree guard	**3283.00**
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	**104674.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-12
FOUNDATIONS

Item No.	Descriptions	Unit	**Rate (in Rs.)**
12.1	Excavation for Structures (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)		
I	Ordinary soil		
A	Manual Means		
(i)	upto 3 m depth	cum	**80.00**
(ii)	3 m to 6 m depth	cum	**103.00**
(iii)	Above 6 m depth	cum	**137.00**
B	Mechanical Means		
(i)	Depth upto 3 m	cum	**63.00**
(ii)	Depth 3 m to 6 m	cum	**72.00**
(iii)	Depth above 6m	cum	**87.00**
II	Ordinary rock (not requiring blasting)		
A	Manual Means		
(i)	Depth upto 3 m	cum	**114.00**
B	Mechanical Means	cum	**82.00**
III	Hard rock (requiring blasting)		
A	Manual Means	cum	**335.00**
IV	Hard rock (blasting prohibited)		
A	Mechanical Means	cum	**390.00**
V	Marshy soil		
(i)	upto 3 m depth		
A	Manual means	cum	**368.00**
B	Mechanical Means	cum	**114.00**
VI	Back Filling in Marshy Foundation Pits	cum	**288.00**
12.2	Filling Annular Space Around Footing in Rock (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per items 13.4.)		
12.3	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	**2202.00**
12.4	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	**6082.00**
12.5	Brick masonry work in cement mortar in foundation complete excluding pointing and plastering, as per drawing and technical specifications		
(i)	Rate for Brick Work in C. M. 1:2 in foundation	cum	**8823.00**
(ii)	Rate for Brick Work in C. M. 1:3 in foundation	cum	**8390.00**
(iii)	Rate for Brick Work in C. M. 1:4 in foundation	cum	**8093.00**
(iv)	Rate for Brick Work in C. M. 1:6 in foundation	cum	**7847.00**
12.6 A	Cement mortar1:3 (1cement :3 sand)	cum	**5945.00**
B	Cement mortar1:2 (1cement :2 sand)	cum	**7256.00**
C	Cement mortar1:4 (1cement :4 sand)	cum	**5044.00**
D	Cement mortar1:6 (1cement :6 sand)	cum	**4298.00**
12.7	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	**5309.00**
(b)	Random Rubble Masonry	cum	**4391.00**
12.8	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications		
A	PCC Grade M15	cum	**7004.00**
B	PCC Grade M20	cum	**7776.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
C	RCC Grade M20		
Case I	Using concrete mixer	cum	**7879.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8184.00**
D	PCC Grade M25		
Case I	Using concrete Mixer	cum	**8463.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8772.00**
E	RCC Grade M25		
Case I	Using concrete Mixer	cum	**8574.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8878.00**
F	PCC Grade M30		
Case I	Using Concrete Mixer	cum	**8519.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**8820.00**
G	RCC Grade M30		
Case I	Using Concrete Mixer	cum	**8596.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**8901.00**
H	RCC Grade M35		
Case I	Using Concrete Mixer	cum	**8748.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**9053.00**
12.9	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 including Royality for earth @ Rs. 3768.00 for each Island.	each	**71034.00**
B	Assuming depth of water 4.0 m and height of island 4.5 m including Royality for earth @ Rs. 13565.00 for each Island.	each	**1085159.00**
C	Providing and constructing one span service road to reach island location from one pier location to another pier location including Royality for earth @ Rs. 225.00 per m for service Road.	metre	**3029.00**
12.10	Providing and laying cutting edge of mild steel weighing 40 kg per metre for well foundation complete as per drawing and technical specification.	tonne	**109123.00**
12.11	Plain/Reinforced cement concrete, in well foundation complete as per drawing and technical specification		
A	Well curb		
(i)	RCC M20 Grade		
Case I	Using concrete mixer	cum	**9092.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8877.00**
(ii)	RCC M25 Grade		
Case I	Using concrete mixer	cum	**9918.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**10270.00**
(iii)	RCC M35 Grade		
Case I	Using concrete mixer	cum	**10194.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**11012.00**
B	Well steining		
(I)	PCC M15 Grade	cum	**7410.00**
(ii)	PCC M20 Grade	cum	**8225.00**
(iii)	RCC M20 Grade		
Case I	Using concrete mixer	cum	**8334.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8137.00**
(iv)	PCC M25 Grade		
Case I	Using concrete mixer	cum	**8974.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8782.00**
(v)	RCC M25 Grade		
Case I	Using concrete mixer	cum	**9092.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9414.00**
(vi)	PCC M30 Grade		
Case I	Using concrete mixer	cum	**9054.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8856.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
(vii)	RCC M30 Grade		
Case I	Using concrete mixer	cum	**9137.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9461.00**
(viii)	RCC M35 Grade		
Case I	Using concrete mixer	cum	**9344.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**10094.00**
(ix)	RCC M40 Grade		**10209.00**
C	Bottom Plug		
(i)	PCC Grade M20		
Case I	Using Concrete Mixer	cum	**8675.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**8809.00**
(ii)	PCC Grade M25		
Case I	Using Concrete Mixer	cum	**9102.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**9232.00**
(iii)	PCC Grade M30		
Case I	Using Concrete Mixer	cum	**9179.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**9313.00**
(iv)	PCC Grade M35		
Case I	Using Concrete Mixer	cum	**9360.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**9490.00**
D	Intermediate plug		
(I)	Grade M20 PCC		
Case I	Using Concrete Mixer	cum	**8289.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**8434.00**
(ii)	Grade M25 PCC		
Case I	Using Concrete Mixer	cum	**8694.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**8837.00**
(iii)	Grade M30 PCC		
Case I	Using Concrete Mixer	cum	**8768.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**8916.00**
E	Top plug		
(i)	Grade M15 PCC		
Case I	Using Concrete Mixer	cum	**6736.00**
(ii)	Grade M20 PCC		
Case I	Using Concrete Mixer	cum	**7477.00**
(iii)	Grade M25 PCC		
Case I	Using Concrete Mixer	cum	**8158.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**7983.00**
(iv)	Grade M30 PCC		
Case I	Using Concrete Mixer	cum	**8231.00**
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	**8051.00**
F	Well cap		
(i)	RCC Grade M20		
Case I	Using concrete Mixer	cum	**7802.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**8105.00**
(ii)	RCC Grade M25		
Case I	Using concrete Mixer	cum	**8574.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**8880.00**
(iii)	RCC Grade M30		
Case I	Using Concrete Mixer	cum	**8596.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**8900.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
(iv)	RCC Grade M35		
Case I	Using Concrete Mixer	cum	**8748.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**9053.00**
(v)	RCC M40 Grade	cum	**9623.00**
12.12	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	**5092.00**
(ii)	Beyond 3m upto 10m depth	metre	**7419.00**
(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	**9798.00**
(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	**18377.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .		**22052.00**
(v)	Beyond 30m upto 40 m	metre	
a	Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter		**43664.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	**52396.00**
B	Clayey soil (6m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	**7443.00**
(ii)	Beyond 3m upto 10m depth	metre	**15896.00**
(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	**20993.00**
b	Add for dewatering @ 5% of cost, if required.	metre	**22043.00**
(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	**39377.00**
b	Add 5% of cost for dewatering of the cost, if required	metre	**51682.00**
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**49221.00**
(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	**93553.00**
b	Add 5% of cost for dewatering, if required	metre	**117877.00**
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**112263.00**
C	Soft rock (6m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	**17515.00**
D	Hard rock (6m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	**20899.00**
12.13	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	**7946.00**
(ii)	Beyond 3m upto 10m depth	metre	**10800.00**
(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	**14263.00**
(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	**26753.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour) .	metre	**32104.00**

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Item No.	Descriptions	Unit	**Rate (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	**63562.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	**76275.00**
B	Clayey soil (7m dia. Well)		
(I)	Depth below bed level upto 3.0 M	metre	**10800.00**
(ii)	Beyond 3m upto 10m depth	metre	**16052.00**
(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	**21199.00**
b	Add for dewatering @ 5% of cost, if required.	metre	**22259.00**
(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	**39764.00**
b	Add 5% of cost for dewatering on the cost, if required	metre	**52190.00**
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**49705.00**
(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	**94474.00**
b	Add 5% of cost for dewatering, if required	metre	**119037.00**
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		**113369.00**
C	Soft rock (7m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	**16453.00**
D	Hard rock (7m dia well)		
(i)	Depth upto 3 m	metre	**23171.00**
12.14	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	**9746.00**
(ii)	Beyond 3m upto 10m depth	metre	**12092.00**
(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	**15970.00**
(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	**29955.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	**35946.00**
(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	**71170.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	**85404.00**
B	Clayey soil (8m dia. Well)		
(i)	Depth upto 3.0 M	metre	**13216.00**
(ii)	Beyond 3m upto 10m depth	metre	**16495.00**
(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	**21783.00**
b	Add for dewatering @ 5% of cost, if required.	metre	**22872.00**
(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	**40859.00**
b	Add 5% of cost for dewatering on the cost, if required	metre	**53627.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**51074.00**
(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	**97075.00**
b	Add 5% of cost for dewatering, if required	metre	**122315.00**
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**116490.00**
C	Soft rock (8m dia well)		
(i)	Depth in soft rock strata upto 3m	metre	**18274.00**
D	Hard rock (8m dia well)		
(i)	Depth in hard rock strata upto 3 m	metre	**22710.00**
12.15	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	**9812.00**
(ii)	Beyond 3m upto 10m depth	metre	**13276.00**
(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	**17534.00**
(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	**32889.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	**39467.00**
(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	**78142.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	**93770.00**
B	Clayey soil (9m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	**13897.00**
(ii)	Beyond 3m upto 10m depth	metre	**17805.00**
(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	**23515.00**
b	Add for dewatering @ 5% of cost, if required.	metre	**24691.00**
(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	**44108.00**
b	Add 5% of cost for dewatering on the cost, if required	metre	**57891.00**
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**55135.00**
(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	**104794.00**
b	Add 5% of cost for dewatering, if required	metre	**132040.00**
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**125753.00**
C	Soft rock (9m dia well)		
(i)	Depth upto 3m	metre	**23424.00**
D	Hard rock (9m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	**26367.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
12.16	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	**11985.00**
(ii)	Beyond 3m upto 10m depth	metre	**13966.00**
(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	**18444.00**
(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	**34598.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	**41517.00**
(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	**82202.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	**98642.00**
B	Clayey soil (10m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	**14937.00**
(ii)	Beyond 3m upto 10m depth	metre	**17194.00**
(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	**22708.00**
b	Add for dewatering @ 5% of cost, if required.	metre	**23844.00**
(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	**42596.00**
'b	Add 5% of cost for dewatering on the cost, if required	metre	**55907.00**
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**53245.00**
(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	**101201.00**
b	Add 5% of cost for dewatering, if required	metre	**127514.00**
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).		**121442.00**
C	Soft rock (10m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	**23932.00**
D	Hard rock (10m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	**31364.00**
12.17	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	**28098.00**
(ii)	Beyond 3m upto 10m depth	metre	**20684.00**
(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	**27316.00**
(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	**51238.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	**61485.00**
(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	**121735.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	**146082.00**
B	Clayey soil (11 m dia. Well)		
(i)	Depth from bed level upto 3.0 M	metre	**24939.00**
(ii)	Beyond 3m upto 10m depth	metre	**35126.00**
(iii)	Beyond 10 m upto 20 m		

Item No.	Descriptions	Unit	**Rate (in Rs.)**
a	Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter	metre	**46390.00**
b	Add for dewatering @ 5% of cost, if required.	metre	**48709.00**
(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	**87016.00**
b	Add 5% of cost for dewatering on the cost, if required	metre	**114209.00**
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**108770.00**
(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	**206737.00**
b	Add 5% of cost for dewatering, if required	metre	**260489.00**
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**248085.00**
C	Soft rock (11m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	**53857.00**
D	Hard rock (11m dia well)		
(i)	Depth of hard rock upto 3 m	metre	**71109.00**
12.18	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)	I) Depth below bed level upto 3.0 M	metre	**57230.00**
(ii)	Beyond 3m upto 10m depth	metre	**63454.00**
(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	**83802.00**
(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	**157190.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	**188628.00**
(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	**373460.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	**448152.00**
B	Clayey soil (12 m dia. Well)		
(i)	Depth below bed level upto 3.0 M	metre	**61650.00**
(ii)	Beyond 3m upto 10m depth	metre	**91074.00**
(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	**120279.00**
b	Add for dewatering @ 5% of cost, if required.	metre	**126292.00**
(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	**225611.00**
b	Add 5% of cost for dewatering on the cost, if required	metre	**296114.00**
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**282013.00**
(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	**536020.00**
b	Add 5% of cost for dewatering, if required	metre	**675385.00**
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**643224.00**
C	Soft rock (12m dia well)		
(i)	Depth of soft rock strata upto 3m	metre	**128833.00**
D	Hard rock (12m dia well)		
(i)	Depth of hard rock strata upto 3 m	metre	**166658.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
12.19	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	**13015.00**
(ii)	Beyond 3m upto 10m depth	metre	**14007.00**
(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	**18498.00**
(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	**34697.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement and Labour .	metre	**41636.00**
(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	**82435.00**
b	Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.	metre	**98922.00**
B	Clayey soil (Twin D Type Well)		
(i)	Depth below bed level upto 3.0 M	metre	**15105.00**
(ii)	Beyond 3m upto 10m depth	metre	**19087.00**
(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	**25209.00**
b	Add for dewatering @ 5% of cost, if required.	metre	**26469.00**
(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	**47286.00**
b	Add 5% of cost for dewatering on the cost, if required	metre	**62063.00**
c	Add 25% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**59107.00**
(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	**112344.00**
b	Add 5% of cost for dewatering, if required	metre	**141554.00**
c	Add 20% of cost for Kentledge including supports, loading arrangement and Labour).	metre	**134813.00**
C	Soft rock (Twin D Type well)		
(i)	Depth of soft rock strata upto 3m	metre	**27770.00**
D	Hard rock (Twin D Type well)		
(i)	Depth of hard rock strata upto 3 m	metre	**34466.00**
12.20	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 plate forms with railing, arrangement for compression and 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 clause1207.6 of MoRTH Specifications.		**#VALUE!**
12.21	Sand filling in wells complete as per drawing and technical specifications	cum	**2202.00**
12.22	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	**100170.00**
12.23	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	**7822.00**
12.24	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	**13056.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
12.25	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	**17085.00**
12.26	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	**5279.00**
12.27	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	**8918.00**
12.28	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	**12923.00**
12.29	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=500 mm)	metre	**2860.00**
12.30	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=750 mm)	metre	**5058.00**
12.31	Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification (Pile Diameter=1000 mm)	metre	**8558.00**
12.32	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	**1876.00**
12.33	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	**3274.00**
12.34	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	**6390.00**
12.35	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	**7387.00**
12.36	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	**8330.00**
12.37	Pile load test on single vertical pile in accordance with IS:2911(Part-IV)	tonne	**6413.00**
12.38	Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification		
A	RCC Grade M20		
(i)	Using Concrete Mixer	cum	**7810.00**
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**8139.00**
B	RCC Grade M25		
(i)	Using concrete mixer.	cum	**8551.00**
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**8898.00**
C	RCC Grade M30		
(i)	Using concrete mixer.	cum	**8645.00**
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**8974.00**
D	RCC Grade M35		
(i)	Using concrete mixer.	cum	**8841.00**
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	**9188.00**
12.39	Levelling course for Pile cap	cum	**6595.00**
12.40	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specifications	tonne	**66702.00**
12.41	Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification	tonne	**84928.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-13
SUB-STRUCTURE

Item No.	Descriptions	Unit	**Rate (in Rs.)**
13.1	Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and technical specifications	cum	**8616.00**
13.2	Pointing with cement mortar (1:3) on brick work in substructure as per Technical specifications	10 sqm	**611.00**
13.3	Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical specifications	10 sqm	**1543.00**
13.4	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications		
A	Random Rubble Masonry	cum	**4984.00**
B	Coursed rubble masonry (first sort)	cum	**5071.00**
C	Ashlar masonry (first sort)	cum	**6544.00**
13.5	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications		
A	PCC Grade M15		
(p)	Height upto 5m	cum	**7410.00**
B	PCC Grade M20		
(p)	Height upto 5m	cum	**8225.00**
C	PCC Grade M25		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	**8974.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8782.00**
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	**9300.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9101.00**
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	**9708.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9500.00**
D	PCC Grade M30		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	**9054.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8856.00**
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	**9383.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9178.00**
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	**9795.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9580.00**
E	RCC Grade M20		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	**8334.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8137.00**
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	**8637.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8433.00**
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	**9016.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**8803.00**
F	RCC Grade M25		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	**9092.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9414.00**
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	**9389.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9722.00**
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	**9835.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**10184.00**
G	RCC Grade M30		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	**9137.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9461.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	**9395.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**9727.00**
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	**9760.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**10106.00**
H	RCC Grade M35		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	**9344.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**10094.00**
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	**9548.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**10315.00**
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	**9854.00**
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	**10645.00**
13.6	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	tonne	**66780.00**
13.7	Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and technical specification	tonne	**84286.00**
13.8	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical specifications	each	**1869.00**
13.9	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification		
A	Granular material	cum	**1867.00**
B	Sandy material	cum	**2387.00**
13.10	Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and technical specification.	cum	**2164.00**
13.11	Supplying, fitting and fixing in position true to line and level cast steel rocker bearing conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	tonne capacity	**1168.00**
13.12	Supplying, fitting and fixing in position true to line and level forged steel roller bearing conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	tonne capacity	**1459.00**
13.13	Supplying, fitting and fixing in position true to line and level sliding plate bearing with PTFE surface sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clause 2004 of MoRTH Specifications.	tonne capacity	**371.00**
13.14	Supplying, fitting and fixing in position true to line and level elastomeric bearing conforming to IRC: 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	cubic centimetre	**1.25**
13.15	Supplying, fitting and fixing in position true to line and level sliding plate bearing with stainless steel plate sliding on stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specifications.	tonne capacity	**260.00**
13.16	Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, 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	**455.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-14
SUPER-STRUCTURE

Item No.	Descriptions	Unit	**Rate (in Rs.)**
14.1	Furnishing and Placing Reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specification		
A	RCC Grade M20		
Case I	Using Concrete Mixer		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	**9003.00**
(q)	Height 5m to 10m	cum	**9378.00**
(r)	Height above 10m	cum	**9753.00**
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	**9378.00**
(q)	Height 5m to 10m	cum	**9753.00**
(r)	Height above 10m	cum	**10128.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	**9352.00**
(q)	Height 5m to 10m	cum	**9742.00**
(r)	Height above 10m	cum	**10131.00**
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	**9742.00**
(q)	Height 5m to 10m	cum	**10131.00**
(r)	Height above 10m	cum	**10521.00**
B	RCC Grade M25		
Case I	Using Concrete Mixer		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	**9858.00**
(q)	Height 5m to 10m	cum	**10269.00**
(r)	Height above 10m	cum	**10679.00**
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	**10269.00**
(q)	Height 5m to 10m	cum	**10679.00**
(r)	Height above 10m	cum	**11090.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	**10219.00**
(q)	Height 5m to 10m	cum	**10645.00**
(r)	Height above 10m	cum	**11071.00**
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	**10645.00**
(q)	Height 5m to 10m	cum	**11071.00**
(r)	Height above 10m	cum	**11497.00**
C	RCC Grade M 30		
Case I	Using Concrete Mixer		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	**9984.00**
(q)	Height 5m to 10m	cum	**10401.00**
(r)	Height above 10m	cum	**10817.00**
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	**10401.00**
(q)	Height 5m to 10m	cum	**10817.00**
(r)	Height above 10m	cum	**11233.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump.		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	**10331.00**
(q)	Height 5m to 10m	cum	**10762.00**
(r)	Height above 10m	cum	**11192.00**
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	**10762.00**
(q)	Height 5m to 10m	cum	**11192.00**
(r)	Height above 10m	cum	**11623.00**
D	RCC/PSC Grade M35		
Case 1	Using concrete mixer.		
(i)	For solid slab super-structure, 18-28% of (a+b+c)		
(p)	Height upto 5m	cum	**10040.00**
(q)	Height 5m to 10m	cum	**10466.00**
(r)	Height above 10m	cum	**10891.00**
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	**10466.00**
(q)	Height 5m to 10m	cum	**10891.00**
(r)	Height above 10m	cum	**11317.00**
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	**11742.00**
(q)	Height 5m to 10m	cum	**12593.00**
(r)	Height above 10m	cum	**13444.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	For solid slab super-structure, 18-28% of (a+b+c)		
(p)	Height upto 5m	cum	**10373.00**
(q)	Height 5m to 10m	cum	**10813.00**
(r)	Height above 10m	cum	**11252.00**
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	**10813.00**
(q)	Height 5m to 10m	cum	**11252.00**
(r)	Height above 10m	cum	**11692.00**
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	**12131.00**
(q)	Height 5m to 10m	cum	**13010.00**
(r)	Height above 10m	cum	**13890.00**
E	PSC Grade M-40		
Case 1	Using concrete mixer.		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	**10840.00**
(q)	Height 5m to 10m	cum	**11292.00**
(r)	Height above 10m	cum	**11744.00**
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	**11292.00**
(q)	Height 5m to 10m	cum	**11744.00**
(r)	Height above 10m	cum	**12195.00**
Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	For solid slab super-structure, 18-28% of (a+b+c)		
(p)	Height upto 5m	cum	**10959.00**
(q)	Height 5m to 10m	cum	**11424.00**
(r)	Height above 10m	cum	**11888.00**
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	**11424.00**
(q)	Height 5m to 10m	cum	**11888.00**
(r)	Height above 10m	cum	**12352.00**
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	**12817.00**
(q)	Height 5m to 10m	cum	**13745.00**
(r)	Height above 10m	cum	**14674.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**
F	PSC Grade M-45		
(i)	For solid slab/voided slab super-structure, 16-26% of cost of concrete (a+b+c)		
(p)	Height upto 5m	cum	**11310.00**
(q)	Height 5m to 10m	cum	**11797.00**
(r)	Height above 10m	cum	**12285.00**
(ii)	For I-beam & slab including launching of precast girders by launching truss upto 40 m span, 21-31% of cost of concrete.		
(p)	Height upto 5m	cum	**11797.00**
(q)	Height 5m to 10m	cum	**12285.00**
(r)	Height above 10m	cum	**12772.00**
(iii)	For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56% of cost of concrete.		
(p)	Height upto 5m	cum	**13260.00**
(q)	Height 5m to 10m	cum	**14235.00**
(r)	Height above 10m	cum	**15210.00**
G	PSC Grade M-50		
(i)	For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55% of cost of concrete		
(p)	Height upto 5m	cum	**13608.00**
(q)	Height 5m to 10m	cum	**14616.00**
(r)	Height above 10m	cum	**15624.00**
H	PSC Grade M- 55		
(i)	For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55% of cost of concrete		
(p)	Height upto 5m	cum	**14306.00**
(q)	Height 5m to 10m	cum	**15366.00**
(r)	Height above 10m	cum	**16426.00**
14.2	a) Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications	tonne	**67881.00**
14.3	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications	tonne	**256357.00**
14.4	Providing and laying Cement concrete wearing coat M-30 grade including reinforcement complete as per drawing and Technical Specifications	cum	**13731.00**
14.5	Mastic Asphalt (Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope 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 515.)	sqm	**326.00**
14.6	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	**2094.00**
14.7	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	**2045.00**
14.8	Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specification	metre	**4044.00**
14.9	Drainage Spouts complete as per drawing and Technical specification	each	**12494.00**
14.10	PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification	cum	**6736.00**
14.11	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification	cum	**12167.00**
14.13	Precast - pretensioned Girders (Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawing and technical specifications)	cum	**33937.00**
14.14	Providing and fixing Helical pipes in voided concrete slabs	metre	**401.00**

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Item No.	Descriptions	Unit	**Rate (in Rs.)**
14.16	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.)	metre	**55.00**
14.17	Burried Joint (Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised wieldable structural steel plate as per IS: 2062, placed symmetrical to centre line of the joint, resting freely over the top surface of the deck concrete, welding of 8 mm dia. 100 mm long galvanised nails spaced 300 mm c/c along the centre line of the plate, all as specified in clause 2604.)	metre	**2661.00**
14.18	Filler joint		
(i)	Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.	metre	**2009.00**
(ii)	Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.	metre	**684.00**
(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	**389.00**
(iv)	Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight	metre	**18.50**
14.19	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	**2025.00**
14.20	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 2606 of MoRTH specifications for road & bridge works.)	metre	**24105.00**
14.21	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	**7443.00**
14.22	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	**14462.00**
14.23	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	**229280.00**
14.24	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	**304450.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-15

RIVER TRAINING AND PROTECTION WORKS

Item No.	Descriptions	Unit	**Rate (in Rs.)**
15.1	Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.		
A	Boulder laid dry without wire crates.	cum	**1793.00**
15.2	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	**3572.00**
15.3	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	**7144.00**
15.4	Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications		
A	Stone/Boulder	cum	**1793.00**
B	Cement Concrete blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15	cum	**7144.00**
15.5	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum	**2281.00**
15.6	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	**686.00**
15.7	Toe protection (A toe wall for toe protection can either be in dry rubble masonry in case of dry rubble pitching or pitching with stones in wire crates or it can be in PCC M15 nominal mix if cement concrete block have been used for pitching . Rates for toe wall can be adopted from respective clauses depending upon approved design. The rate for excavation for foundation, dry rubble masonry and PCC M15 have been analysed and given in respective chapters.)		
15.8	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	**6391.00**
B	Cement Concrete blocks Grade M15	cum	**9408.00**
15.9	Dry rubble Flooring	cum	**2057.00**
15.10	Curtain wall complete as per drawing and Technical specification		
A	Stone masonry in cement mortar (1:3)	cum	**5309.00**
B	Cement concrete Grade M15	cum	**7004.00**
15.11	Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.	cum	**1819.00**
15.12	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	**3958.00**
15.13	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	**6891.00**

Item No.	Descriptions	Unit	**Rate (in Rs.)**

CHAPTER-16
REPAIR AND REHABILITATION

Item No.	Descriptions	Unit	**Rate (in Rs.)**
16.1	Removal of existing cement concrete wearing coat including its disposal complete as per Technical specification without causing any detrimental effect to any part of the bridge structure and removal of dismantled material with all lifts and lead upto 1000m (Thickness 75 mm)	sqm	**100.00**
16.2	Removal of existing asphaltic wearing coat comprising of 50 mm thick asphaltic concrete laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000m.	sqm	**75.00**
16.3	Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical specification	sqm	**1707.00**
16.4	Providing and inserting nipples with approved fixing compound after drilling holes for grouting as per Technical specifications including subsequent cutting/removal and sealing of the hole as necessary of nipples after completion of grouting with Cement/Epoxy	each	**132.00**
16.5	Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical specification.		
A	Cement Grout	kg	**171.00**
B	Cement mortar (1:1) Grouting	kg	**164.00**
16.6	Patching of damaged concrete surface with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer and as approved by the Engineer.	sqm	**4616.00**
16.7	Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.	kg	**1651.00**
16.8	Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification	sqm	**1130.00**
16.9	Removal of defective concrete, cleaning the surface thoroughly, applying the shotcrete mixture mechanically with compressed air under pressure, comprising of cement, sand, coarse aggregates, water and quick setting compound in the proportion as per clause 2807.1., sand and coarse aggregates conforming to IS: 383 and table 1 of IS: 9012 respectively, water cement ratio ranging from 0.35 to 0.50, density of gunite not less than 2000 kg/cum, strength not less than 25 Mpa and workmanship conforming to clause 2807.6.	sqm	**375.00**
16.10	Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete	sqm	**271.00**
16.11	Eproxy bonding of new concrete to old concrete	sqm	**1595.00**
16.12	Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification	tonne	**579219.00**
16.13	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	**546479.00**
16.14	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	**528332.00**
16.15	Replacement of bearings complete as per Technical specification	each	**304486.00**
16.16	Rectification of bearings as per Technical specifications	each	**206091.00**
16.17	Replacement of Expansion Joints complete as per drawings	metre	**4453.00**
16.18	Replacement of damaged concrete railing.	metre	**173.00**
16.19	Replacement of crash barrier.	metre	**292.00**
16.20	Replacement of damaged mild steel railing	metre	**149.00**
16.21	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	**346.00**
16.22	Repair of RCC Railing (Carrying out repair of RCC M30 railing to bring it to the original shape.)	metre	**204.00**
16.23	Repair of steel Railing (Repair of steel railing to bring it to the original shape)	metre	**377.00**

Analysis of Rate

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CHAPTER - 1
CARRIAGE OF MATERIALS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.1			**Loading and Unloading of Stone Boulder/ Stone aggregates/Sand/ Kanker/Moorum**	cum				
			Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip					
			Unit = cum					
			Taking output = 5.5 cum					
			Time required for					
			i) Positioning of tipper at loading point		1 Min			
			ii) Loading by front end loader 1 cum bucket capacity @ 25 cum per hour		13 Min			
			iii) Maneuvering, reversing, dumping and turning for return		2 Min			
			iv) Waiting time, unforeseen contingencies etc		4 Min			
			Total		**20 Min**			
			a) Machinery					
			Tipper 5.5 tonnes capacity	hour	0.330	491.65	162.25	P&M-048
			Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.330	803.34	265.10	P&M-017
			b) Overhead charges @ 8% on (a)				34.19	
			c) Contractor's profit @ 10% on (a+b)				46.15	
			Cost for 5.5 cum = a+b+c				507.69	
			Rate per cum = (a+b+c)/ 5.5				92.31	
		Note	**Unloading will be by tipping.**			***say***	***92.00***	
1.2			**Loading and Unloading of Boulders by Manual Means**					
			Unit = cum					
			Taking output = 5.5 cum					
			a) Labour					
			Mate	day	0.110	329.34	36.23	L-12
			Mazdoor for loading and unloading	day	0.750	152.91	114.68	L-13
			b) Machinery					
			Tipper 5.5 tonne capacity	hour	0.750	491.65	368.74	P&M-048
			c) Overhead charges @ 8% on (a+b)				41.57	
			d) Contractor's profit @ 10% on (a+b+c)				56.12	
			Cost for5.5 cum = a+b+c+d				617.34	
			Rate per cum = (a+b+c+d)/5.5				112.24	
		Note	**Unloading will be by tipping.**			***say***	***112.00***	
1.3			**Loading and Unloading of Cement or Steel by Manual Means and Stacking.**					
			Unit = tonne					
			Taking output = 10 tonnes					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor for loading and unloading	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	2.000	517.53	1035.06	P&M-057
			c) Overhead charges @ 8% on (a+b)				109.38	
			d) Contractor's profit @ 10% on (a+b+c)				147.66	
			Cost for10 tonnes = a+b+c+d				1624.25	
			Rate per tonnes = (a+b+c+d)/10				162.43	
						say	***162.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.4			**Cost of Haulage Excluding Loading and Unloading**					
			Haulage of materials by tipper excluding cost of loading, unloading and stacking.					
			Unit = t.km					
			Taking output 10 tonnes load and lead 10 km = 100 t.km					
		(i)	**Surfaced Road**					
			Speed with load : 25 km / hour.					
			Speed while Returning empty :35 km / hour.					
			a) Machinery.					
			Tipper 10 tonne capacity					
			Time taken for onward haulage with load	hour	0.400	491.65	196.66	P&M-048
			Time taken for empty return trip.	hour	0.290	491.65	142.58	P&M-048
			b) Overhead charges @ 8% on (a)				27.14	
			c) Contractor's profit @ 10% on (a+b)				36.64	
			cost for 100 t km = a+b+c				403.02	
			Rate per t.km = (a+b+c)/100				4.03	
						say	***4.00***	
		(ii)	**Unsurfaced Graveled Road**					
			Speed with load: 20 km / hour					
			Speed for empty return trip :30 km / hour					
			a) Machinery					
			Tipper 10 tonnes capacity					
			Time taken for onward haulage with load	hour	0.500	491.65	245.83	P&M-048
			Time taken for empty return trip	hour	0.330	491.65	162.25	P&M-048
			b) Overhead charges @ 8% on (a)				32.65	
			c) Contractor's profit @ 10% on (a+b)				44.07	
			Cost for 100 t .km = a+b+c				484.79	
			Rate per t.Km = (a+b+c)/100				4.85	
						say	***4.80***	
		(iii)	**Katcha Track and Track in River Bed/Nallah Bed and Choe Bed**					
			Speed with load :10 km / hour					
			Speed while returning empty:15 km / hour					
			a) Machinery					
			Tipper 10 tonnes capacity					
			Time taken for onward haulage	hour	1.000	491.65	491.65	P&M-048
			Time taken for empty return trip	hour	0.670	491.65	329.41	P&M-048
			b) Overhead charges @ 8% on (a)				65.68	
			c) Contractor's profit @ 10% on (a+b)				88.67	
			Cost for 100 t .km = a+b+c				975.42	
			Rate per t.Km = (a+b+c)/100				9.75	
						say	***9.80***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.5			**Hand Broken Stone Aggregates 63 mm Nominal**					
			Supply of quarried stone, hand breaking into coarse aggregate 63 mm nominal size (passing 80 mm and retained on 50 mm sieve) and stacking as directed					
			Unit = cum					
			Taking output = 1 cum					
			a) Labour					
			Mate	day	0.060	329.34	19.76	L-12
			Mazdoor	day	1.500	152.91	229.36	L-13
			b) Material					
			Supply of quarried stone 150 - 200 mm size	cum	1.100	882.15	970.37	M-002
			c) Overhead charges @ 8% on (a+b)				97.56	
			d) Contractor's profit @ 10% on (a+b+c)				131.70	
			Rate per cum = a+b+c+d				1448.75	
						say	***1449.00***	
							1449.00	
1.6			**Crushing of Stone Aggregates 13.2 mm Nominal Size**					
			Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 13.2 mm nominal size.					
			Unit = cum					
			Taking Output = 600 cum at crusher location.					
			a) Labour					
			Mate	day	0.760	329.34	250.30	L-12
			Mazdoor Skilled	day	2.000	244.65	489.30	L-15
			Mazdoor including breaking of any oversize boulder.	day	17.000	152.91	2599.40	L-13
			b) Material					
			Stone Boulder of size 150 mm and below	cum	800.000	1000.71	800568.77	M-001
			c) Machinery					
			Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	16924.34	101546.05	P&M-028
			Front end loader 1 cum bucket capacity	Hour	20.000	803.34	16066.89	P&M-017
			Tipper 5.5 cum capacity	Hour	20.000	491.65	9833.03	P&M-048
			d) Overhead charges @ 8% on (a+b+c)				74508.30	
			e) Contractor's profit @ 10% on (a+b+c+d)				100586.20	
			Cost for 600 cum = (a+b+c+d+e)x0.95				1051125.83	
			Rate per cum = (a+b+c+d+e) * 0.95 / 600				**1751.88**	
						say	***1752.00***	
							1752.00	
		Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.					
			2. 95 per cent of above cost will be attributed to the production of 600 cum of stone chips of 13.2 mm size and balance 5 per cent to the production of stone dust which comes out as a by-product.					
			3. The integrated stone crusher includes primary and secondary crushing units.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.7			**Crushing of Stone Aggregates 20 mm Nominal Size**					
			Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 20 mm nominal size					
			Unit = cum					
			Taking Output = 670 cum at crusher location.					
			a) Labour					
			Mate	day	0.760	329.34	250.30	L-12
			Mazdoor Skilled	day	2.000	244.65	489.30	L-15
			Mazdoor including breaking of any size boulder.	day	17.000	152.91	2599.40	L-13
			b) Material					
			Stone Boulder of size 150 mm and below	cum	800.000	1000.71	800568.77	M-001
			c) Machinery					
			Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	16924.34	101546.05	P&M-028
			Front end loader 1 cum bucket capacity	Hour	20.000	803.34	16066.89	P&M-017
			Tipper 5.5 cum capacity	Hour	20.000	491.65	9833.03	P&M-048
			d) Overhead charges @ 8% on (a+b+c)				74508.30	
			e) Contractor's profit @ 10% on (a+b+c+d)				100586.20	
			Cost for 670 cum = (a+b+c+d+e)x0.90				995803.42	
			Rate per cum = (a+b+c+d+e) * 0.90 / 670				**1486.27**	
						say	***1486.00***	
							1486.00	
		Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 20 and 40 mm.					
			2. 90 per cent of above cost will be attributed to the production of 670 cum of stone aggregates of 20mm size and balance 10 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.					
			3. The integrated stone crusher includes primary and secondary crushing units.					
1.8			**Crushing of Stone Aggregates 40 mm Nominal Size**					
			Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 40 mm nominal size					
			Unit = cum					
			Taking Output = 750 cum at crusher location.					
			a) Labour					
			Mate	day	0.760	329.34	250.30	L-12
			Mazdoor Skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	17.000	152.91	2599.40	L-13
			b) Material					
			Stone Boulder of size 150 mm and below	cum	800.000	1000.71	800568.77	M-001
			c) Machinery					
			Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	16924.34	101546.05	P&M-028
			Front end loader 1 cum bucket capacity	Hour	20.000	803.34	16066.89	P&M-017
			Tipper 5.5 cum capacity	Hour	20.000	491.65	9833.03	P&M-048
			d) Overhead charges @ 8% on (a+b+c)				74508.30	
			e) Contractor's profit @ 10% on (a+b+c+d)				100586.20	
			Cost for 750 cum = (a+b+c+d+e)x0.85				940481.01	
			Rate per cum = (a+b+c+d+e)x0.85/750				**1253.97**	
						say	***1254.00***	
		Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.					
			2. 85 per cent of above cost will be attributed to the production of 750 cum of stone aggregates of 40mm size and balance 15 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.					
			3. The integrated stone crusher includes primary and secondary crushing units.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.3 (MoRD)			**Loading and Unloading of Bricks by Manual Means and Stacking.**					
		(i)	**Loading of Bricks by Manual Means including a lead of upto 30 m.**					
			Unit = 1000 Nos.					
			Taking output = 2000 Nos.					
			a) Labour					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor for loading and unloading	day	0.250	152.91	38.23	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	0.330	517.53	170.78	P&M-057
			c) Overhead charges @ 8% on (a+b)				16.98	
			d) Contractor's profit @ 10% on (a+b+c)				22.93	
			Cost for 2000 Nos. = a+b+c+d				252.22	
			Rate for 1000 Bricks = (a+b+c+d)/2000				126.11	
						say	***126.00***	
		(ii)	**UnLoading and Stacking of Bricks by Manual Means including a lead of upto 30 m.**					
			Unit = 1000 Nos.					
			Taking output = 2000 Nos.					
			a) Labour					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor for loading and unloading	day	0.250	152.91	38.23	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	0.330	517.53	170.78	P&M-057
			c) Overhead charges @ 8% on (a+b)				16.98	
			d) Contractor's profit @ 10% on (a+b+c)				22.93	
			Cost for 2000 Nos. = a+b+c+d				252.22	
			Rate for 1000 Bricks = (a+b+c+d)/2000				126.11	
						say	***126.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.6 (MoRD)			**Loading and Unloading of Bitumen Drums by Manual Means**					
		(i)	**Loading of Bitumen Drums by Manual Means including a lead of upto 30 m.**					
			Unit = tonne					
			Taking output = 10 tonnes					
			a) Labour					
			Mate	day	0.060	329.34	19.76	L-12
			Mazdoor for loading and unloading	day	1.600	152.91	244.65	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	1.250	517.53	646.91	P&M-057
			c) Overhead charges @ 8% on (a+b)				72.91	
			d) Contractor's profit @ 10% on (a+b+c)				98.42	
			Cost for10 tonnes = a+b+c+d				1082.65	
			Rate per tonnes = (a+b+c+d)/10				108.26	
						say	***108.00***	
		(ii)	**UnLoading of Bitumen Drums by Manual Means including a lead of upto 30 m.**					
			Unit = tonne					
			Taking output = 10 tonnes					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mazdoor for loading and unloading	day	1.200	152.91	183.49	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	1.250	517.53	646.91	P&M-057
			c) Overhead charges @ 8% on (a+b)				67.75	
			d) Contractor's profit @ 10% on (a+b+c)				91.46	
			Cost for10 tonnes = a+b+c+d				1006.07	
			Rate per tonnes = (a+b+c+d)/10				100.61	
						say	***101.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks / Input ref.
1.6 (MoRD)	**Loading and Unloading of Hume Pipes**							
	(i)	Loading of RCC Hume pipes by mechanical means including a lead upto 30 m						
	A.	**1000 / 1200 mm dia Hume pipe**						
		Unit = per pipe						
		Taking output = 9 pipes						
		a)	**Labour**					
			Mate	day	0.02	329.34	6.59	
			Mazdoor (Unskilled)	day	0.50	152.91	76.45	
		b)	**Machinery**					
			Truck	hour	0.33	517.53	170.78	
			Crane	hour	0.33	1,336.16	440.93	
		c)	**Overhead charges @ 8% on (a+b)**				55.58	
		d)	**Contractor's profit @ 10% on (a+b+c)**				75.03	
		Cost for 9 pipes = a+b+c+d					825.37	
		Rate per pipe = (a+b+c+d)/9					**92.00**	
(ii)	Unloading of RCC Hume pipe by manual means including a lead upto 30 m							
	A.	**1000/1200 mm dia RCC Hume pipes**						
		Unit = per pipe						
		Taking output = 5 pipes						
		a)	**Labour**					
			Mate	day	0.04	329.34	13.17	
			Mazdoor (Unskilled)	day	1.00	152.91	152.91	
		b)	**Machinery**					
			Truck	hour	2.00	517.53	1,035.06	
		c)	**Material**					
			Wooden sleepers 250mm x 250mm x125mm hire charges 3 nos sleeper	hour	2.00	5.20	10.40	
			Crow bars 2 nos not less than 40 mm dia (hire-charges)	hour	2.00	5.20	10.40	
		d)	**Overhead charges @ 8% on (a+b)**				97.75	
		e)	**Contractor's profit @ 10% on (a+b+c)**				131.97	
			Cost for 5 pipes = a+b+c+d+e/5				1,451.66	
			Rate per pipe = (a+b+c+d+e)				**290.00**	

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CHAPTER - 2
SITE CLEARANCE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.1	201		**Cutting of Trees, including cutting of Trunks, Branches and Removal**					
			Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 metres and earth filling in the depression / pit.					
			Unit = Each					
		(i)	**Girth from 300 mm to 600 mm**					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres lead by manual means.	day	0.600	152.91	91.74	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	379.91	37.99	P&M-053
			c) Overhead charges @ 8% on (a+b)				10.91	
			d) Contractor's profit @ 10% on (a+b+c)				14.72	
			Rate for each tree = a+b+c+d				161.95	
						say	***162.00***	
2.1		(ii)	**Girth from 600 mm to 900 mm**					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling, and stacking of serviceable materials within 1000 metres lead by manual means	day	0.900	152.91	137.62	L-13
			b) Machinery					
			Tractor-trolley	hour	0.300	379.91	113.97	P&M-053
			c) Overhead charges @ 8% on (a+b)				21.18	
			d) Contractor's profit @ 10% on (a+b+c)				28.59	
			Rate for each tree = a+b+c+d				314.54	
						say	***315.00***	
2.1		(iii)	**Girth from 900 mm to 1800 mm**					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Tractor-trolley	hour	0.400	379.91	151.97	P&M-053
			c) Overhead charges @ 8% on (a+b)				38.73	
			d) Contractor's profit @ 10% on (a+b+c)				52.29	
			Rate for each tree = a+b+c+d				575.14	
						say	***575.00***	
2.1		(iv)	**Girth above 1800 mm**					
			a) Labour					
			Mate	day	0.160	329.34	52.69	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	4.000	152.91	611.62	L-13
			b) Machinery					
			Tractor-trolley	hour	0.600	379.91	227.95	P&M-053
			c) Overhead charges @ 8% on (a+b)				71.38	
			d) Contractor's profit @ 10% on (a+b+c)				96.36	
			Rate for each tree = a+b+c+d				1060.01	
						say	***1060.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.2	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 .					
			By Manual Means					
			Unit = Hectare					
			Taking output = 1 Hectare					
			a) Labour					
			Mate	day	2.000	329.34	658.67	L-12
			Mazdoor	day	50.000	152.91	7645.30	L-13
			b) Overhead charges @ 8% on (a)				664.32	
			c) Contractor's profit @ 10% on (a+b)				896.83	
			Rate per Hectare = a+b+c				9865.12	
						say	***9865.00***	
2.3	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.					
			Unit = Hectare					
			Taking output = 1 Hectare					
2.3		(ii)	**By Mechanical Means**					
		A	**In area of light jungle**					
			a) Labour					
			Mate	day	0.160	329.34	52.69	L-12
			Mazdoor	day	4.000	152.91	611.62	L-13
			b) Machinery					
			Dozer 80 HP with attachment for removal of trees & stumps	hour	10.000	3756.78	37567.83	P&M-014
			Tractor-trolley	hour	1.000	379.91	379.91	P&M-053
			c) Overhead charges @ 8% on (a+b)				3088.96	
			d) Contractor's profit @ 10% on (a+b+c)				4170.10	
			Rate per Hectare = a+b+c+d				45871.13	
						say	***45871.00***	
2.4	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 the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres					
			Unit = cum					
			Taking output = 1.25 cum					
		(i)	**Lime /Cement Concrete**					
		I	**By Manual Means**					
		A	**Lime Concrete, cement concrete grade M-10 and below**					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor for dismantling and loading	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				21.49	
			d) Contractor's profit @ 10% on (a+b+c)				29.01	
			Cost for 1.25 cum = a+b+c+d				319.16	
			Rate per cum = (a+b+c+d)/ 1.25				255.33	
						say	***255.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4 (i)		B	**Cement Concrete Grade M-15 & M-20**					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mazdoor for dismantling and loading	day	1.250	152.91	191.13	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				24.81	
			d) Contractor's profit @ 10% on (a+b+c)				33.50	
			Cost for 1.25 cum = a+b+c+d				368.49	
			Rate per cum = (a+b+c+d)/ 1.25				294.79	
						say	***295.00***	
2.4 (i)		C	**Prestressed / Reinforced cement concrete grade M-20 & above**					
			a) Labour					
			Mate	day	0.150	329.34	49.40	L-12
			Blacksmith	day	0.250	352.86	88.22	L-02
			Mazdoor for dismantling, loading and unloading	day	3.500	152.91	535.17	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				62.03	
			d) Contractor's profit @ 10% on (a+b+c)				83.74	
			Cost for 1.25 cum = a+b+c+d				921.13	
			Rate per cum = (a+b+c+d)/ 1.25				736.90	
						say	***737.00***	
2.4		II	**By Mechanical Means for items No. 202(B)& (C)**					
		A	**Cement Concrete Grade M-15 & M-20**					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor for loading and unloading	day	0.250	152.91	38.23	L-13
			Mazdoor with Pneumatic breaker	day	0.250	176.43	44.11	L-14
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.5 cum per hour	hour	0.670	334.04	223.81	P&M-001
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				33.22	
			d) Contractor's profit @ 10% on (a+b+c)				44.85	
			Cost for 1.25 cum = a+b+c+d				493.38	
			Rate per cum = (a+b+c+d)/ 1.25				394.71	
						say	***395.00***	
2.4 II		B	**Prestressed / reinforced cement concrete grade M-20 & above**					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mazdoor with Pneumatic breaker	day	0.660	176.43	116.44	L-14
			Blacksmith	day	0.250	352.86	88.22	L-02
			Mazdoor for loading and unloading	day	0.250	152.91	38.23	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.00 cum per hour	hour	1.000	334.04	334.04	P&M-001
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				55.68	
			d) Contractor's profit @ 10% on (a+b+c)				75.16	
			Cost for 1.25 cum = a+b+c+d				826.81	
			Rate per cum = (a+b+c+d)/ 1.25				661.45	
						say	***661.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4		(ii)	**Dismantling Brick / Tile work**					
		A	**In lime mortar**					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor for dismantling, loading and unloading	day	0.500	152.91	76.45	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				14.85	
			d) Contractor's profit @ 10% on (a+b+c)				20.05	
			Cost for 1.25 cum = a+b+c+d				220.51	
			Rate per cum = (a+b+c+d)/ 1.25				176.41	
						say	***176.00***	
2.4 (ii)		B	**In cement mortar**					
			a) Labour					
			Mate	day	0.030	329.34	9.88	L-12
			Mazdoor for dismantling, loading and unloading	day	0.750	152.91	114.68	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				18.17	
			d) Contractor's profit @ 10% on (a+b+c)				24.53	
			Cost for 1.25 cum = a+b+c+d				269.84	
			Rate per cum = (a+b+c+d)/ 1.25				215.87	
						say	***216.00***	
2.4 (ii)		C	**In mud mortar**					
			a) Labour					
			Mate	day	0.016	329.34	5.27	L-12
			Mazdoor for dismantling and loading	day	0.400	152.91	61.16	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				13.52	
			d) Contractor's profit @ 10% on (a+b+c)				18.25	
			Cost for 1.25 cum = a+b+c+d				200.78	
			Rate per cum = (a+b+c+d)/ 1.25				160.63	
						say	***161.00***	
2.4 (ii)		D	**Dry brick pitching or brick soling**					
			a) Labour					
			Mate	day	0.014	329.34	4.61	L-12
			Mazdoor for Dismantling, loading and unloading	day	0.350	152.91	53.52	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				12.86	
			d) Contractor's profit @ 10% on (a+b+c)				17.36	
			Cost for 1.25 cum = a+b+c+d				190.92	
			Rate per cum = (a+b+c+d)/ 1.25				152.73	
						say	***153.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4		(iii)	**Dismantling Stone Masonry**					
		A	**Rubble stone masonry in lime mortar**					
			a) Labour					
			Mate	day	0.024	329.34	7.90	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.600	152.91	91.74	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				16.18	
			d) Contractor's profit @ 10% on (a+b+c)				21.84	
			Cost for 1.25 cum = a+b+c+d				240.24	
			Rate per cum = (a+b+c+d)/ 1.25				192.19	
						say	***192.00***	
2.4 (iii)		B	**Rubble stone masonry in cement mortar.**					
			a) Labour					
			Mate	day	0.030	329.34	9.88	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.750	152.91	114.68	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				18.17	
			d) Contractor's profit @ 10% on (a+b+c)				24.53	
			Cost for 1.25 cum = a+b+c+d				269.84	
			Rate per cum = (a+b+c+d)/ 1.25				215.87	
						say	***216.00***	
2.4 (iii)		C	**Rubble Stone Masonry in mud mortar.**					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.500	152.91	76.45	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				14.85	
			d) Contractor's profit @ 10% on (a+b+c)				20.05	
			Cost for 1.25 cum = a+b+c+d				220.51	
			Rate per cum = (a+b+c+d)/ 1.25				176.41	
						say	***176.00***	
2.4 (iii)		D	**Dry rubble masonry**					
			a) Labour					
			Mate	day	0.018	329.34	5.93	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.450	152.91	68.81	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				14.18	
			d) Contractor's profit @ 10% on (a+b+c)				19.15	
			Cost for 1.25 cum = a+b+c+d				210.65	
			Rate per cum = (a+b+c+d)/ 1.25				168.52	
						say	***169.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4 (iii)		E	**Dismantling stone pitching/ dry stone spalls.**					
			a) Labour					
			Mate	day	0.016	329.34	5.27	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.400	152.91	61.16	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				13.52	
			d) Contractor's profit @ 10% on (a+b+c)				18.25	
			Cost for 1.25 cum = a+b+c+d				200.78	
			Rate per cum = (a+b+c+d)/ 1.25				160.63	
						say	***161.00***	
2.4 (iii)		F	**Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.**					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor for dismantling, loading and unloading	day	0.500	152.91	76.45	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				14.85	
			d) Contractor's profit @ 10% on (a+b+c)				20.05	
			Cost for 1.25 cum = a+b+c+d				220.51	
			Rate per cum = (a+b+c+d)/ 1.25				176.41	
						say	***176.00***	
2.4		(iv)	**Wood Work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level**					
			a) Labour					
			Mate	day	0.060	329.34	19.76	L-12
			Carpenter	day	0.500	352.86	176.43	L-04
			Mazdoor for dismantling, loading and unloading.	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	379.91	102.58	P&M-053
			c) Overhead charges @ 8% on (a+b)				36.13	
			d) Contractor's profit @ 10% on (a+b+c)				48.78	
			Cost for 1.25 cum = a+b+c+d				536.59	
			Rate per cum = (a+b+c+d)/ 1.25				429.27	
						say	***429.00***	
2.4		(v)	**Steel Work in all types of sections upto a height of 5 m above plinth level excluding cutting of rivet.**					
			Unit = tonne					
			Taking output = 1 tonne					
		A	**Including dismembering**					
			a) Labour					
			Mate	day	0.140	329.34	46.11	L-12
			Blacksmith	day	1.000	352.86	352.86	L-02
			Mazdoor for dismantling, loading and unloading	day	2.500	152.91	382.27	L-13
			Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				19.53	
			b) Machinery					
			Tractor-trolley	hour	0.170	379.91	64.59	P&M-053
			c) Overhead charges @ 8% on (a+b)				69.23	
			d) Contractor's profit @ 10% on (a+b+c)				93.46	
			Rate per tonne = a+b+c+d				1028.03	
						say	***1028.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4 (v)		B	**Excluding dismembering.**					
			a) Labour					
			Mate	day	0.220	329.34	72.45	L-12
			Mazdoor for dismantling, loading and unloading	day	2.000	152.91	305.81	L-13
			Blacksmith	day	0.500	352.86	176.43	L-02
			Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				13.87	
			b) Machinery					
			Tractor-trolley	hour	0.170	379.91	64.59	P&M-053
			c) Overhead charges @ 8% on (a+b)				50.65	
			d) Contractor's profit @ 10% on (a+b+c)				68.38	
			Rate per tonne = a+b+c+d				752.18	
						say	***752.00***	
2.4 (v)		C	**Extra over item No(v) A and(v) B for cutting rivets.**					
			Unit = each					
			Taking output = 10 rivets					
			a) Labour					
			Mate	day	0.010	329.34	3.29	L-12
			Blacksmith	day	0.130	352.86	45.87	L-02
			Mazdoor	day	0.130	152.91	19.88	L-13
			b) Overhead charges @ 8% on (a)				5.52	
			c) Contractor's profit @ 10% on (a+b)				7.46	
			Cost for 10 rivets = a+b+c				82.02	
			Rate for each rivet = (a+b+c)/10				8.20	
						say	***8.20***	
2.4		(vi)	**Scraping of Bricks Dismantled from Brick Work including Stacking.**					
			Unit = numbers					
			Taking output = 1000 numbers					
		A	**In lime/Cement mortar**					
			a) Labour					
			Mate	day	0.140	329.34	46.11	L-12
			Mazdoor	day	3.500	152.91	535.17	L-13
			b) Overhead charges @ 8% on (a)				46.50	
			c) Contractor's profit @ 10% on (a+b)				62.78	
			Rate per1000 Nos = a+b+c				690.56	
						say	***691.00***	
2.4 (iv)		B	**In mud mortar**					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mazdoor	day	1.250	152.91	191.13	L-13
			b) Overhead charges @ 8% on (a)				16.61	
			c) Contractor's profit @ 10% on (a+b)				22.42	
			Rate per1000 Nos = a+b+c				246.63	
						say	***247.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4		(vii)	**Scraping of Stone from Dismantled Stone Masonry**					
			Unit = cum					
			Taking output = 1 cum					
		A	**In cement and lime mortar**					
			a) Labour					
			Mate	day	0.060	329.34	19.76	L-12
			Mazdoor	day	1.400	152.91	214.07	L-13
			b) Overhead charges @ 8% on (a)				18.71	
			c) Contractor's profit @ 10% on (a+b)				25.25	
			Rate per cum = a+b+c				277.79	
						say	***278.00***	
2.4 (vii)		B	**In Mud mortar**					
			a) Labour					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor	day	0.300	152.91	45.87	L-13
			b) Overhead charges @ 8% on (a)				3.93	
			c) Contractor's profit @ 10% on (a+b)				5.31	
			Rate per cum = a+b+c				58.41	
						say	***58.00***	
2.4		(viii)	**Scarping Plaster in Lime or Cement Mortar from Brick/ Stone Masonry**					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.160	329.34	52.69	L-12
			Mazdoor for scarping and loading	day	4.000	152.91	611.62	L-13
			b) Machinery					
			Tractor-trolley	hour	0.320	379.91	121.57	P&M-053
			c) Overhead charges @ 8% on (a+b)				62.87	
			d) Contractor's profit @ 10% on (a+b+c)				84.88	
			Cost for 100 sqm = a+b+c+d				933.64	
			Rate per sqm = (a+b+c+d)/100				9.34	
						say	***9.30***	
2.4		(ix)	**Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works.**					
			Unit = metre					
			Taking output = 1 metre					
		A	**Up to 600 mm dia**					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor	day	0.520	152.91	79.51	L-13
			b) Overhead charges @ 8% on (a)				6.89	
			c) Contractor's profit @ 10% on (a+b)				9.30	
			Rate per metre = a+b+c				102.28	
						say	***102.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.4 (ix)		B	**Above 600 mm to 900 mm dia**					
			a) Labour					
			Mate	day	0.030	329.34	9.88	L-12
			Mazdoor	day	0.700	152.91	107.03	L-13
			b) Overhead charges @ 8% on (a)				9.35	
			c) Contractor's profit @ 10% on (a+b)				12.63	
			Rate per metre = a+b+c				138.89	
						say	***139.00***	
2.4 (ix)		C	**Above 900 mm**					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mazdoor	day	1.200	152.91	183.49	L-13
			b) Overhead charges @ 8% on (a)				16.00	
			c) Contractor's profit @ 10% on (a+b)				21.60	
			Rate per metre = a+b+c				237.55	
						say	***238.00***	
		Note	1. The excavation of earth, dismantling of stone masonry work in head walls and protection works is not included which is to be measured and paid separately.					
			2. Credit for retrieved stone from masonry work may be taken as per actual availability.					
2.5	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					
			Unit = cum					
			Taking output = 1 cum					
		I	**By Manual Means**					
		A	**Bituminous courses**					
			a) Labour					
			Mate	day	0.060	329.34	19.76	L-12
			Mazdoor for dismantling, loading and unloading	day	1.500	152.91	229.36	L-13
			b) Machinery					
			Tractor-trolley	hour	0.380	379.91	144.37	P&M-053
			c) Overhead charges @ 8% on (a+b)				31.48	
			d) Contractor's profit @ 10% on (a+b+c)				42.50	
			Rate per cum = a+b+c+d				467.46	
						say	***467.00***	
2.5 I		B	**Granular courses**					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor for dismantling, loading and unloading.	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Tractor-trolley	hour	0.330	379.91	125.37	P&M-053
			c) Overhead charges @ 8% on (a+b)				23.32	
			d) Contractor's profit @ 10% on (a+b+c)				31.48	
			Rate per cum = a+b+c+d				346.24	
						say	***346.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.5		II	**By Mechanical Means**					
		A	**Bituminous course**					
			a) Labour					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor	day	0.300	152.91	45.87	L-13
			b) Machinery					
			Tractor-trolley	hour	0.380	379.91	144.37	P&M-053
			Farm tractor with ripper @ 60 cum per hour	hour	0.017	517.53	8.80	P&M-055
			c) Overhead charges @ 8% on (a+b)				16.19	
			d) Contractor's profit @ 10% on (a+b+c)				21.85	
			Rate per cum = a+b+c+d				240.37	
						say	***240.00***	
2.6	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					
			Unit = cum					
			Taking output = 1 cum					
			a) Labour					
			Mate	day	0.030	329.34	9.88	L-12
			Semi skilled mazdoor for operating pneumatic tools	day	0.500	176.43	88.22	L-14
			Mazdoors as helpers including loading and unloading	day	0.500	152.91	76.45	L-13
			b) Machinery					
			Air compressor 250 cfm with two leads for pneumatic cutters/ hammers @ 1 cum per hour	hour	1.000	334.04	334.04	P&M-001
			Tractor-trolley	hour	0.400	379.91	151.97	P&M-053
			Joint Cutting Machine with 2-3 blades	hour	1.000	176.43	176.43	P&M-083
			c) Overhead charges @ 8% on (a+b)				66.96	
			d) Contractor's profit @ 10% on (a+b+c)				90.39	
			Rate per cum = a+b+c+d				994.34	
						say	***994.00***	
		Note	The above analysis is for removal of complete pavement. In case full depth repair work is required to be done after dismantling, provision of a concrete cutting and sawing machine may be added for 0.25 hours.					
2.7	202		**Dismantling of 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.					
			Unit = running metre					
			Taking output = 1 metre					
			a) Labour					
			Mate	day	0.006	329.34	1.98	L-12
			Mazdoor including loading and unloading	day	0.150	152.91	22.94	L-13
			b) Machinery					
			Tractor-trolley	hour	0.050	379.91	19.00	P&M-053
			c) Overhead charges @ 8% on (a+b)				3.51	
			d) Contractor's profit @ 10% on (a+b+c)				4.74	
			Rate per metre = a+b+c+d				52.16	
						say	***52.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.8	**202**		**Dismantling of Kerb Stone**					
			Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre					
			Unit = running metre					
			Taking output = 10 metre					
			a) Labour					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor including loading and unloading	day	0.150	152.91	22.94	L-13
			b) Machinery					
			Tractor-trolley	hour	0.200	379.91	75.98	P&M-053
			c) Overhead charges @ 8% on (a+b)				8.18	
			d) Contractor's profit @ 10% on (a+b+c)				11.04	
			Cost for 10 m = a+b+c+d				121.43	
			Rate per metre = (a+b+c+d)/10				12.14	
						say	***12.00***	
2.9	**202**		**Dismantling of 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					
			Unit = running metre					
			Taking output = 10 metre					
			a) Labour					
			Mate	day	0.015	329.34	4.94	L-12
			Mazdoor including loading and unloading	day	0.225	152.91	34.40	L-13
			b) Machinery					
			Tractor-trolley	hour	0.300	379.91	113.97	P&M-053
			c) Overhead charges @ 8% on (a+b)				12.27	
			d) Contractor's profit @ 10% on (a+b+c)				16.56	
			Cost for 10 m = a+b+c+d				182.14	
			Rate per metre = (a+b+c+d)/10				18.21	
						say	***18.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
2.10	**202**		**Dismantling of 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.					
			Unit = Each					
			Taking output = one KM stone					
	A		**5th KM stone**					
			Quantity of cement concrete = 0.392 cum					
			a) Labour					
			Mate	day	0.130	329.34	42.81	L-12
			Mazdoor	day	0.750	152.91	114.68	L-13
			b) Machinery					
			Tractor-trolley	hour	0.150	379.91	56.99	P&M-053
			c) Overhead charges @ 8% on (a+b)				17.16	
			d) Contractor's profit @ 10% on (a+b+c)				23.16	
			Rate for one 5th KM stone = a+b+c+d				254.80	
						say	***255.00***	
	B		**Ordinary KM Stone**					
			Quantity of cement concrete = 0.269 cum					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor	day	0.500	152.91	76.45	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	379.91	37.99	P&M-053
			c) Overhead charges @ 8% on (a+b)				9.68	
			d) Contractor's profit @ 10% on (a+b+c)				13.07	
			Rate for one ordinary KM stone = a+b+c+d				143.78	
						say	***144.00***	

CHAPTER - 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.3	**301**		**Excavation in Soil with Dozer with lead upto 100 metres**					
			Excavation for road way in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 metres (average lead50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Dozer, 80 HP @ 30 cum per hour	hour	6.000	3756.78	22540.70	P&M-014
			c) Overhead charges @ 8% on (a+b)				1829.83	
			d) Contractor's profit @ 10% on (a+b+c)				2470.27	
			Cost for 180 cum = a+b+c+d				27172.95	
			Rate per cum = (a+b+c+d)/180				150.96	
						say	***151.00***	
3.4	**301**		**Excavation in Ordinary Rock with Dozer with lead upto 100 metres**					
			Excavation for roadway in ordinary rock by deploying a dozer, 80 HP including cutting and pushing the cut earth to site of embankment upto a distance of 100 metres (average lead 50 metres), trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.					
			Unit = cum					
			Taking output = 108 cum					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Mazdoor	day	3.000	152.91	458.72	L-13
			b) Machinery					
			Dozer, 80 HP @ 20 cum per hour	hour	6.000	3756.78	22540.70	P&M-014
			c) Overhead charges @ 8% on (a+b)				1843.11	
			d) Contractor's profit @ 10% on (a+b+c)				2488.20	
			Cost for 108 cum = a+b+c+d				27370.25	
			Rate per cum = (a+b+c+d)/108				253.43	
						say	***253.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.5	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 metres					
			Unit = cum					
			Taking 0utput = 180 cum					
			a) Labour					
			Mate	day	0.220	329.34	72.45	L-12
			Mazdoor	day	3.000	152.91	458.72	L-13
			Driller	day	2.000	294.05	588.10	L-06
			Blaster	day	0.250	352.86	88.22	L-03
			b) Machinery					
			Dozer, 80 HP @ 30 cum per hour	hour	6.000	3756.78	22540.70	P&M-014
			Air compressor, 250 cfm with 2 jack hammer	hour	6.000	334.04	2004.24	P&M-001
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Tipper10 tonne capacity	hour	11.250	491.65	5531.08	P&M-048
			c) Materials					
			Gelatin 80 per cent	kg	63.000	131.73	8299.27	M-110
			Electric Detonators @ 1 detonator for 2 gelatin sticks of 125 gms each	each	252.000	4.61	1161.90	M-100 /100
			Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	370.50	33345.27	M-096
			d) Overhead charges @ 8% on (a+b+c)				6312.80	
			e) Contractor's profit @ 10% on (a+b+c+d)				8522.28	
			Cost for 180 cum = a+b+c+d+e				93745.09	
			Rate per cum = (a+b+c+d+e)/180				520.81	
						say	***521.00***	
		Note	1. The quality and availability of rock shall be checked before affording credit.					
			2. In case some rock is issued to the contractor at site, the item of carriage shall be reduced/restricted to that extent.					
3.6	301		**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with Disposal upto 1000 metres.**					
			Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m (including royality @ Rs. 24.00 per cum but excluding watering, rolling & compaction)					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	1621.98	9731.88	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.000	491.65	7866.43	P&M-048
			c) Overhead charges @ 8% on (a+b)				1434.44	
			d) Contractor's profit @ 10% on (a+b+c)				1936.49	
			Cost for 360 cum = a+b+c+d				21301.39	
			Rate per cum = (a+b+c+d)/360				59.17	
			Royality @ Rs. 24.00 per Cum				24.00	
			Rate per cum				83.17	
						say	***83.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
	3.13	**304**	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.					
		(i)	**Ordinary soil**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Manual Means (Depth upto 3 m)**					
			a) Labour					
			Mate	day	0.320	329.34	105.39	L-12
			Mazdoor	day	8.000	152.91	1223.25	L-13
			b) Overhead charges @ 8% on (a)				106.29	
			c) Contractor's profit @ 10% on (a+b)				143.49	
			Cost for 10 cum = a+b+c				1578.42	
			Rate per cum = (a+b+c)/10				157.84	
						say	***158.00***	
		Note	Cost of dewatering may be added where required upto 10 per cent of labour cost Assessment for dewatering shall be made as per site conditions..					
3.13 (i)		**B**	**Mechanical Means (Depth upto 3 m)**					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.320	329.34	105.39	L-12
			Mazdoor	day	8.000	152.91	1223.25	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1621.98	9731.88	P&M-026
			c) Overhead charges @ 8% on (a+b)				884.84	
			d) Contractor's profit @ 10% on (a+b+c)				1194.54	
			Cost for 300 cum = a+b+c+d				13139.89	
			Rate per cum = (a+b+c+d)/300				43.80	
						say	***44.00***	
		Note	Cost of dewatering upto 5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
3.13		**(ii)**	**Ordinary Rock (not requiring blasting)**					
		A	**Manual Means (Depth upto 3 m)**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.400	329.34	131.73	L-12
			Mazdoor	day	10.000	152.91	1529.06	L-13
			b) Overhead charges @ 8% on (a)				132.86	
			c) Contractor's profit @ 10% on (a+b)				179.37	
			Cost for 10 cum = a+b+c				1973.02	
			Rate per cum = (a+b+c)/10				197.30	
						say	***197.00***	
		Note	Cost of dewatering upto 10 per cent of labour cost may be added, where required. Assessment for dewatering shall be made as per site conditions..					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.13 (ii)		B	**Mechanical Means**					
			Unit = cum					
			Taking output = 216 cum					
			a) Labour					
			Mate	day	0.240	329.34	79.04	L-12
			Mazdoor	day	6.000	152.91	917.44	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1621.98	9731.88	P&M-026
			c) Overhead charges @ 8% on (a+b)				858.27	
			d) Contractor's profit @ 10% on (a+b+c)				1158.66	
			Cost for 216 cum = a+b+c+d				12745.29	
			Rate per cum = (a+b+c+d)/216				59.01	
						say	***59.00***	
		Note	1.Cost of dewatering upto 5 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2.In case of rock, foundation beyond3 m is not dug and hence not included.					
3.13		(iii)	**Hard Rock (requiring blasting)**					
		A	**Manual Means**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			i) Mate	day	0.530	329.34	174.55	L-12
			ii) Driller	day	0.840	294.05	247.00	L-06
			iii) Blaster	day	0.400	352.86	141.14	L-03
			iv) Mazdoor	day	12.000	152.91	1834.87	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 jack hammer @ 15 cum per hour	hour	0.67	334.04	223.81	P&M-001
			c) Material					
			Blasting Material	kg	3.500	131.73	461.07	M-110
			Detonator electric	each	14.000	4.61	64.55	M-100 /100
			d) Overhead charges @ 8% on (a+b+c)				251.76	
			e) Contractor's profit @ 10% on (a+b+c+d)				339.88	
			Cost for 10 cum = a+b+c+d+e				3738.63	
			Rate per cum = (a+b+c+d+e)/10				373.86	
						say	***374.00***	
							374.00	
		Note	Cost of dewatering @ 10 per cent of labour cost may be added, where required Assessment for dewatering shall be made as per site conditions.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.13		**(iv)**	**Hard Rock (blasting prohibited)**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Mechanical Means**					
			a) Labour					
			Mate	day	0.200	329.34	65.87	L-12
			Mazdoor	day	5.000	152.91	764.53	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1 cum per hour	hour	10.000	334.04	3340.41	P&M-001
			c) Overhead charges @ 8% on (a+b)				333.66	
			d) Contractor's profit @ 10% on (a+b+c)				450.45	
			Cost for 10 cum = a+b+c+d				4954.92	
			Rate per cum = (a+b+c+d)/10				495.49	
						say	***495.00***	
		Note	1. Cost of dewatering upto 5 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2.In case of rock, foundation beyond 3 m is not dug and hence not included.					
3.13		**(v)**	**Marshy soil**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Manual means (upto 3 m depth)**					
			a) Labour					
			Mate/Supervisor	day	0.400	329.34	131.73	L-12
			Mazdoor	day	10.000	152.91	1529.06	L-13
			b) Machinery					
			Tractor-trolley	hour	2.670	379.91	1014.37	P&M-053
			c) Material					
			Selected earth for refilling	cum	5.000	373.33	1866.63	M-168
			d) Overhead charges @ 8% on (a+b+c)				363.34	
			e) Contractor's profit @ 10% on (a+b+c+d)				490.51	
			Cost for 10 cum = a+b+c+d+e				5395.65	
			Rate per cum = (a+b+c+d+e)/ 10				539.56	
						say	***540.00***	
		Note	1. Cost of dewatering @ 30 per cent of (a), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2. Shoring & strutting 20 per cent of (a), where required may be added					
			3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item (i) to (iv) for ordinary soil					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.13 (v)		B	**Mechanical Means**					
			a) Labour					
			i) Mate	day	0.080	329.34	26.35	L-12
			ii) Mazdoor for dressing sides, bottom and backfilling	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.170	1621.98	275.74	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.450	491.65	221.24	P&M-048
			c) Material					
			Selected earth for refilling	cum	5.000	373.33	1866.63	M-168
			d) Overhead charges @ 8% on (a+b+c)				215.66	
			e) Contractor's profit @ 10% on (a+b+c+d)				291.14	
			Cost for 10 cum = a+b+c+d+e				3202.57	
			Rate per cum = (a+b+c+d+e)/10				320.26	
						say	***320.00***	
		Note	1. Cost of dewatering @ 20 per cent of (a+b) may be added, where required					
			2. Shoring & strutting @ 10 per cent of (a+b), where required may be added					
			3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item (i) to (iv) for ordinary soil					
3.15	305.4.3		**Scarifying Existing Bituminous Surface to a depth of 50 mm by Mechanical Means**					
			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.					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor	day	0.250	152.91	38.23	L-13
			b) Machinery					
			Tractor with ripper attachment @ 60 cum per hour	hour	0.080	517.53	41.40	P&M-055
			Front end loader 1 cum bucket capacity @ 25 cum per hour	hour	0.200	803.34	160.67	P&M-017
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.230	491.65	113.08	P&M-048
			c) Overhead charges @ 8% on (a+b)				28.53	
			d) Contractor's profit @ 10% on (a+b+c)				38.52	
			Cost for 100 sqm = a+b+c+d				423.73	
			Rate per sqm = (a+b+c+d)/100				4.24	
						say	***4.20***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.16	**305**		**Construction of Embankment with Material obtained from Borrowpits**					
			Construction of embankment with approved material 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.					
			Unit = cum					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Hydraulic Excavator1 cum bucket capacity @ 60 cum per hour	hour	1.670	1621.98	2708.71	P&M-026
			Tipper 10 tonne capacity	tonne.km	160 x L	4.12	1976.02	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading	100.00		30.00	3000.00	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3756.78	1878.39	P&M-014
			Motor grader for grading @ 100 cum per hour	hour	1.000	2627.63	2627.63	P&M-032
			Water tanker6 KL capacity	hour	4.000	517.53	2070.11	P&M-060
			Vibratory roller 8 -10 tonnes @ 100 cum per hour	hour	1.000	1671.38	1671.38	P&M-059
			c) Material					
			Cost of water	KL	24.000	55.58	1333.81	M-195
			Compensation & Royality for earth taken from private land	cum	100.000	49.40	4940.04	M-098
			d) Overhead charges @ 8% on (a+b+c)				1789.77	
			e) Contractor's profit @ 10% on (a+b+c+d)				2416.19	
			Cost for 100 cum = a+b+c+d+e				26578.13	
			Rate per cum = (a+b+c+d+e)/100				265.78	
						say	***266.00***	
		Note	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.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.17	**305**		**Construction of Embankment with Material Deposited from Roadway Cutting**					
			Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor	day	0.500	152.91	76.45	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3756.78	1878.39	P&M-014
			Motor grader for grading @ 100 cum per hour	hour	1.000	2627.63	2627.63	P&M-032
			Water tanker6 KL capacity	hour	4.000	517.53	2070.11	P&M-060
			Vibratory roller 8-10 tonnes @ 100 cum per hour	hour	1.000	1671.38	1671.38	P&M-059
			c) Material					
			Cost of water	KL	24.000	55.58	1333.81	M-195
			d) Overhead charges @ 8% on (a+b+c)				773.15	
			e) Contractor's profit @ 10% on (a+b+c+d)				1043.75	
			Rate for 100 cum = a+b+c+d+e				11481.27	
			Rate per cum = (a+b+c+d+e)/100				114.81	
			Royality @ Rs. 24.00 per Cum				24.00	
						say	***139.00***	
		Note	In case the earth cutting is done by dozer and pushed for filling in the embankment, the input of dozer in the cost of embankment shall be deleted as the same is already provided in the cost of excavation. However, if the earth is dumped by tippers from roadway cutting, the input of dozer for spreading is required to be provided.					
3.18	**305**		**Construction of Subgrade and Earthen Shoulders**					
			Construction of sub-grade and earthen shoulders with approved material 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					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Hydraulic excavator1 cum bucket capacity @ 60 cum per hour	hour	1.670	1621.98	2708.71	P&M-026
			Tipper 10 tonne capacity	tonne.km	175xL	4.12	2161.27	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading	100.00		45.00	4500.00	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3756.78	1878.39	P&M-014
			Motor grader for grading @ 50 cum per hour	hour	2.000	2627.63	5255.26	P&M-032
			Water tanker with 6 km lead	hour	4.000	517.53	2070.11	P&M-060
			Vibratory roller 8-10 tonnes @ 80 cum per hour	hour	1.250	1671.38	2089.23	P&M-059
			c) Material					
			Cost of water	KL	24.000	55.58	1333.81	M-195
			Compensation & Royality for earth taken from private land	cum	100.000	49.40	4940.04	M-098
			d) Overhead charges @ 8% on (a+b+c)				2168.23	
			e) Contractor's profit @ 10% on (a+b+c+d)				2927.11	
			Cost for 100 cum = a+b+c+d+e				32198.24	
			Rate per cum = (a+b+c+d+e)/100				321.98	
						say	***322.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.19	**305.3.4**		**Compacting Original Ground**					
		Case-I	**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.					
			Unit = cum					
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Mazdoor	day	3.000	152.91	458.72	L-13
			b) Machinery					
			Tractor with ripper attachment	hour	9.000	517.53	4657.75	P&M-055
			Motor grader for grading	hour	6.000	2627.63	15765.78	P&M-032
			Water tanker 6 KL capacity	hour	4.000	517.53	2070.11	P&M-060
			Vibratory roller 8-10 tonne @ 80 cum/hour	hour	7.500	1671.38	12535.35	P&M-059
			c) Material					
			Cost of water	KL	24.000	55.58	1333.81	M-195
			d) Overhead charges @ 8% on (a+b+c)				2948.88	
			e) Contractor's profit @ 10% on (a+b+c+d)				3980.99	
			Cost for 600 cum = a+b+c+d+e				43790.93	
			Rate per cum = (a+b+c+d+e)/600				72.98	
						say	***73.00***	
3.22	**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 sods and watering.					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Mazdoor for preparation of ground and fetching of sods	day	3.000	152.91	458.72	L-13
			b) Machinery					
			Water tanker including watering for 3 months	hour	2.000	517.53	1035.06	P&M-060
			Tractor-trolley	hour	1.000	379.91	379.91	P&M-053
			c) Material					
			Farm yard manure @ 0.18 cum per 100 sqm at site of work	cum	0.180	98.80	17.78	M-172
			Cost of water	KL	12.000	55.58	666.91	M-195
			d) Overhead charges @ 8% on (a+b+c)				207.83	
			e) Contractor's profit @ 10% on (a+b+c+d)				280.57	
			Cost for 100 sqm = a+b+c+d+e				3086.30	
			Rate per 100 sqm = (a+b+c+d+e)/100				30.86	
						say	***31.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.23	**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 of 0.23 litres per sqm and laying and fixing jute netting, including watering for 3 months all as per clause 308.					
			Unit = sqm					
			Taking output = 240 sqm					
			a) Labour					
			Mate	day	0.400	329.34	131.73	L-12
			Mazdoor	day	10.000	152.91	1529.06	L-13
			b) Machinery					
			Water tanker 6 KL capacity including watering for 3 months	hour	14.000	517.53	7245.39	P&M-060
			Tractor-trolley	hour	2.400	379.91	911.79	P&M-053
			c) Material					
			Seeds	kg	3.600	74.10	266.76	M-167
			Sludge/Farm yard manure @ 0.18 cum per 100 sqm	cum	0.430	98.80	42.48	M-172
			Bitumen Emulsion	litre	55.200	33.000	1821.60	M-076
			Jute netting, open weave, 2.5 cm square opening	sqm	264.000	33.35	8803.15	M-127
			Cost of water for 3 months	KL	84.000	55.58	4668.34	M-195
			d) Overhead charges @ 8% on (a+b+c)				2033.62	
			e) Contractor's profit @ 10% on (a+b+c+d)				2745.39	
			Cost for 240 sqm = a+b+c+d+e				30199.33	
			Rate per sqm = (a+b+c+d+e)/240				125.83	
						say	***126.00***	
							126.00	
3.24	**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)					
			Unit = metre					
			Taking output = 10 metres					
		A	**Mechanical means**					
			a) Labour					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor for dressing of bed and side of drain	day	0.250	152.91	38.23	L-13
			b) Machinery					
			Hydraulic Excavator 0.3 cum bucket capacity @ 30 metres per hour	hour	0.330	1621.98	535.25	P&M-026
			c) Overhead charges @ 8% on (a+b)				46.14	
			d) Contractor's profit @ 10% on (a+b+c)				62.29	
			Cost for 10 metres = a+b+c+d				685.21	
			Rate per metre = (a+b+c+d)/10				68.52	
						say	***69.00***	
3.24		**B**	**Manual Means**					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Overhead charges @ 8% on (a)				26.57	
			c) Contractor's profit @ 10% on (a+b)				35.87	
			Cost for 10 metres = a+b+c				394.60	
			Rate per metre = (a+b+c)/10				39.46	
						say	***39.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	Where lining of drain is provided, quantity shall be worked out based on approved design and drawing and priced on rate of cement concrete of approved grade or stone/brick masonry as the case may be.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.25	**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.					
			Unit = metre					
			Taking output = 10 metres					
		A	**Mechanical Means**					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor for dressing of bed and side of drain	day	0.500	152.91	76.45	L-13
			b) Machinery					
			Hydraulic Excavator 0.3 cum bucket capacity @ 15 metres per hour	hour	0.670	1621.98	1086.73	P&M-026
			c) Overhead charges @ 8% on (a+b)				93.58	
			d) Contractor's profit @ 10% on (a+b+c)				126.33	
			Cost for 10 metres = a+b+c+d				1389.68	
			Rate per metre = (a+b+c+d)/10				138.97	
						say	***139.00***	
3.25		**B**	**Manual Means**					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Mazdoor	day	3.000	152.91	458.72	L-13
			b) Overhead charges @ 8% on (a)				39.86	
			c) Contractor's profit @ 10% on (a+b)				53.81	
			Cost for 10 metres = a+b+c				591.91	
			Rate per metre = (a+b+c)/10				59.19	
						say	***59.00***	
3.26	**309**		**Surface Drains in Hard Rock**					
			Rate per metre may be worked out based on quantity of hard rock as per design.					
			For rate of hard rock cutting, refer relevant item in this chapter					
3.27	**309**		**Sub-Surface Drains with Perforated Pipe**					
			Construction of subsurface 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.					
			Unit = metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor for excavation and back filling	day	2.000	152.91	305.81	L-13
			c) Material					
			Perforated pipe of cement concrete, internal dia 100 mm	metre	10.000	148.82	1488.25	M-141
			Crushed stone as per table 300-3	cum	2.400	1190.60	2857.43	M-012
			d) Overhead charges @ 8% on (a+b+c)				373.17	
			e) Contractor's profit @ 10% on (a+b+c+d)				503.78	
			Cost for 10 metres = a+b+c+d+e				5541.62	
			Rate per metre = (a+b+c+d+e)/10				554.16	
						say	***554.00***	
							554.00	
		Note	Type of pipe may be modified depending upon provision in design.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.28	**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.					
			Unit = metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor for excavation and back filling with aggregates	day	1.500	152.91	229.36	L-13
			b) Material					
			Crushed stone as per table 300-3	cum	1.350	1190.60	1607.31	M-012
			c) Overhead charges @ 8% on (a+b)				147.46	
			d) Contractor's profit @ 10% on (a+b+c)				199.07	
			Cost for 10 metres = a+b+c+d				2189.78	
			Rate per metre = (a+b+c+d)/10				218.98	
						say	***219.00***	
							219.00	
3.29	**309**		**Underground Drain at Edge of Pavement**					
			Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab10 cm in thickness on urban roads.					
			Unit = Running metre					
			Taking output = one metre					
			a) Earthwork in soil	cum	1.500	44.00	66.00	Item No. 3.13
			b) RCC work M-20	cum	0.495	7693.00	3808.04	Item 12.8 (C) RCC
			Rate per metre = (a+b)				3874.04	
			Rates for these items may be taken from chapters on earth work and substructures respectively.			***say***	***3874.00***	
							3874.00	
3.30	**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.					
			Unit = sqm					
			Taking output = 3500sqm					
			a) Labour					
			Mate	day	0.280	329.34	92.21	L-12
			Mazdoor	day	6.000	152.91	917.44	L-13
			Mazdoor skilled	day	1.000	244.65	244.65	L-15
			b) Machinery					
			Smooth 3 wheeled steel roller 8-10 tonnes	hour	3.000	676.32	2028.95	P&M-044
			Water tanker 6 KL, one trip per hour	hour	3.000	517.53	1552.58	P&M-060
			c) Material					
			Cost of water	KL	18.000	55.58	1000.36	M-195
			d) Overhead charges @ 8% on (a+b+c)				466.89	
			e) Contractor's profit @ 10% on (a+b+c+d)				630.31	
			Cost for 3500 sqm = a+b+c+d+e				6933.39	
			Rate per sqm = (a+b+c+d+e)/3500				1.98	
						say	***2.00***	
							2.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.31	**313**		**Construction of Rock fill Embankment**					
			Construction of rock fill embankment with broken hard rock fragments 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.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor	day	1.500	152.91	229.36	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	3756.78	1878.39	P&M-014
			Vibratory road roller 8-10 tonnes @ 100 cum per hour	hour	1.000	1671.38	1671.38	P&M-059
			Water tanker 6 KL, one trip per hour	hour	2.000	517.53	1035.06	P&M-060
			c) Material					
			Cost of water	KL	12.000	55.58	666.91	M-195
			d) Overhead charges @ 8% on (a+b+c)				439.54	
			e) Contractor's profit @ 10% on (a+b+c+d)				593.38	
			Cost for 100 cum = a+b+c+d+e				6527.19	
			Rate per cum = (a+b+c+d+e)/100				65.27	
						say	***65.00***	
							65.00	
		Note	It is assumed that rock is available locally at site from roadway cutting. In case, portion of the rock requires breaking to acceptable size of 300 mm, breaking charges will have to be added.					
			EARTH WORK ON HILL ROAD					
3.32	**301**		**Excavation in Hill Area in Soil by Mechanical Means**					
			Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres.					
			Unit = cum					
			Taking output = 260 cum					
			a) Labour					
			Mate	day	0.240	329.34	79.04	L-12
			Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	152.91	917.44	L-13
			b) Machinery					
			Dozer 80 HP (D-80 A 12)@ 43.28 cum per hour	hour	6.000	3756.78	22540.70	P&M-014
			Front end loader	hour	6.000	803.34	4820.07	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	12.000	491.65	5899.82	P&M-048
			c) Overhead charges @ 8% on (a+b)				2740.56	
			d) Contractor's profit @ 10% on (a+b+c)				3699.76	
			Cost for 260 cum = a+b+c+d				40697.39	
			Rate per cum = (a+b+c+d)/260				156.53	
						say	***157.00***	
							157.00	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth shall be disposed off on the valley side.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.33	**301**		**Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting.**					
			Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres.					
			Unit = cum					
			Taking output = 170 cum					
			a) Labour					
			Mate	day	0.320	329.34	105.39	L-12
			Mazdoor	day	8.000	152.91	1223.25	L-13
			b) Machinery					
			Dozer 80 HP (D-80 A 12)@ 28.32 cum per hour	hour	6.000	3756.78	22540.70	P&M-014
			Front end loader	hour	7.000	803.34	5623.41	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	491.65	3441.56	P&M-048
			c) Overhead charges @ 8% on (a+b)				2634.74	
			d) Contractor's profit @ 10% on (a+b+c)				3556.91	
			Cost for 170 cum = a+b+c+d				39125.96	
			Rate per cum = (a+b+c+d)/170				230.15	
						say	***230.00***	
							230.00	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth can be disposed off on the valley side.					
3.34	**301**		**Excavation in Hilly Areas in Hard Rock Requiring Blasting**					
			Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.					
			Unit = cum					
			Taking output = 170 cum					
			a) Labour					
			Mate	day	0.490	329.34	161.37	L-12
			Mazdoor	day	10.000	152.91	1529.06	L-13
			Driller	day	2.000	294.05	588.10	L-06
			Blaster	day	0.250	352.86	88.22	L-03

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Machinery					
			Dozer 80 HP (D-80 A 12)@ 28.32 cum per hour	hour	6.000	3756.78	22540.70	P&M-014
			Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	334.04	1670.20	P&M-001
			Front end loader	hour	7.000	803.34	5623.41	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	491.65	3441.56	P&M-048
			c) Materials					
			Gelatine 80 per cent	kg	35.000	131.73	4610.70	M-110
			Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	140.000	4.61	645.50	M-100 /100
			d) Overhead charges @ 8% on (a+b+c)				3271.91	
			e) Contractor's profit @ 10% on (a+b+c+d)				4417.07	
			Cost for 170 cum = a+b+c+d+e				48587.81	
			Rate per cum = (a+b+c+d+e)/170				285.81	
						say	***286.00***	
							286.00	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth can be disposed off on the valley side.					
			In case of hill roads, the altitude effect comes into play. The output of men and machines decreases progressively after 2100 m elevation leading to increase in cost . High altitude effect has been explained in the basic approach.					
3.35			**Work in Urban Roads**					
			The cost of earth work in urban roads inhabited area will be comparatively higher due to following reasons:					
			a) There is mixed traffic on urban roads like slow moving hand and animal driven carts, rickshaws, cycles, two/ three wheeler apart from the usual vehicular traffic resulting into traffic jams. This causes loss of working time which may be in the range of 10 -15 per cent					
			b) There is considerable disruption of traffic adversely affecting the efficiency of the working parties including machines due to congestion caused by pedestrian traffic, local road side venders, parking of vehicles by the road side, encroachments by the shopkeepers and local shops who make use of the berms of the road in front of these shops and unauthorised conversion of road berms into mini local market The output of manpower and machines is substantially reduced due to factors mentioned above.					
			c) Cost of living in urban areas is comparatively more resulting into higher wages.					
			d) At times, work is executed during night time due to heavy traffic during day time. This involves extra expenditure by way of making arrangement for lighting and special transport for working parties due to odd hour					
			In the light of above, the authorities engaged in preparing the cost estimates may exercise their judgment and cater for the additional cost to the extent of 2 to 3 per cent, keeping in view the severity of factors mentioned above. Supporting details for the extra cost based on the actual conditions in specific cases will have to give in justification.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
3.36	**Suggesti ve**		**Embankment Construction with Flyash/Pond ash available from coal or lignite burning Thermal Plants as waste material.**					
			Construction of embankment with Flyash conforming to table 1 of IRC: SP: 58 - 2001 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: 58-2001 and as per approved plans.					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.160	329.34	52.69	L-12
			Mazdoor	day	4.000	152.91	611.62	L-13
			b) Machinery					
			Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum/hour	hour	6.000	1621.98	9731.88	P&M-026
			Tipper 10Tcapacity flyash 360 x 1.2 = 432 tonnes	tonne.km	432 x L	70.57	91461.31	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriagefor loading and unloading				9146.13	
			Dozer 80 HP for spreading @ 200 cum/hour	hour	1.800	3756.78	6762.21	P&M-014
			Motor Grader for grading @ 100 cum/hour	hour	3.600	2627.63	9459.47	P&M-032
			Water tanker6 KL capacity	hour	12.000	517.53	6210.34	P&M-060
			Vibratory Roller 8-10 tonne @ 100 cum/hour	hour	3.600	1671.38	6016.97	P&M-059
			c) Overhead charges @ 8% on (a+b)				11156.21	
			d) Contractor's profit @ 10% on (a+b+c)				15060.88	
			Cost for 360 cum = a+b+c+d				165669.72	
			Rate per cum = (a+b+c+d)/360				460.19	
						say	***460.00***	
							460.00	
		Note	1.As flyash is available free of cost as waste material from Thermal Plants, cost of material has not been added.					
			2.The earth cover on sides and intermediate layers of earth sandwiching the flyash have not been included in this analysis. The same are required to be provided as per approved design and priced separately as embankment construction.					

CHAPTER - 4								
SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS								
Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.1	401		**Granular Sub-Base with Close Graded Material (Table:- 400-1)**					
		A	**Plant Mix Method**					
			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					
			Unit = cum					
			Taking output = 225 cum (450 tonne)					
			a) Labour					
			Mate	day	0.400	329.34	131.73	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	8.000	152.91	1223.25	L-13
			b) Machinery					
			Wet mix plant @ 75 tonne capacity per hour	hour	6.000	1591.40	9548.39	P&M-092
			Electric generator 125 KVA	hour	6.000	979.77	5878.65	P&M-018
			Water tanker 6 KL capacity 5 km lead with one tripper hour	hour	4.500	517.53	2328.88	P&M-060
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Tipper 10 tonne	tonne.km	450 x L	4.12	5557.55	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover loading and unloading				555.75	
			Motor Grader 110 HP	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8-10 t	hour	6.000	1671.38	10028.28	P&M-059
			c) Material					
			Close graded Granular sub-base Material as per table 400-1					
			For Grading-I Material					
			53 mm to 9.5 mm @ 50 per cent	cum	144.000	1449.36	208707.94	M-013
			9.5 mm to 2.36 mm @ 20 per cent	cum	57.000	1681.07	95821.11	M-017
			2.36 mm below @ 30 per cent	cum	86.400	896.55	77461.63	M-020
			Cost of water	KL	27.000	55.58	1500.54	M-195
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	100.800	1681.07	169452.07	M-015
			9.5 mm to 2.36 mm @ 25 per cent	cum	72.000	1681.07	121037.19	M-017
			2.36 mm below @ 40 per cent	cum	115.200	896.55	103282.18	M-020
			Cost of water	KL	27.000	55.58	1500.54	M-195
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	100.800	1681.07	169452.07	M-016
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	36.000	1681.07	60518.60	M-018
			2.36 mm below @ 52.5 per cent	cum	151.200	896.55	135557.86	M-020
			Cost of water	KL	27.000	55.58	1500.54	M-195
4.1A		(i)	**Rate per cum for grading-I Material**					
			d) Overhead charges @ 8% on (a+b+c)				35185.51	
			e) Contractor's profit @ 10% on (a+b+c+d)				47500.44	
			Cost for 225 cum = a+b+c+d+e				522504.79	
			Rate per cum = (a+b+c+d+e)/225				2322.24	
						say	***2322.00***	
							2322.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.1A		**(ii)**	**Rate per cum for grading-II Material**					
			d) Overhead charges @ 8% on (a+b+c)				36127.97	
			e) Contractor's profit @ 10% on (a+b+c+d)				48772.76	
			Cost for 225 cum = a+b+c+d+e				536500.33	
			Rate per cum = (a+b+c+d+e)/225				2384.45	
						say	***2384.00***	
							2384.00	
4.1A		**(iii)**	**Rate per cum for grading-III Material**					
			d) Overhead charges @ 8% on (a+b+c)				33868.54	
			e) Contractor's profit @ 10% on (a+b+c+d)				45722.52	
			Cost for 225 cum = a+b+c+d+e				502947.75	
			Rate per cum = (a+b+c+d+e)/225				2235.32	
						say	***2235.00***	
							2235.00	
		Note	Any one of the grading for material may be adopted as per design					
4.1		**B**	**By Mix in Place Method**					
			Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.480	329.34	158.08	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor unskilled	day	10.000	152.91	1529.06	L-13
			b) Machinery					
			Motor Grader 110 HP @ 50 cum	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8 -10 tonne	hour	6.000	1671.38	10028.28	P&M-059
			Tractor - Rotavator	hour	12.000	506.94	6083.31	P&M-054
			Water tanker 6 KL capacity	hour	3.000	517.53	1552.58	P&M-060
			c) Material					
			Close graded Granular sub-base Material as per table 400-1					
			For Grading-I Material					
			53 mm to 9.5 mm @ 50 per cent	cum	192.000	1449.36	278277.25	M-013
			9.5 mm to 2.36 mm @ 20 per cent	cum	76.000	1681.07	127761.48	M-017
			2.36 mm below @ 30 per cent	cum	115.200	896.55	103282.18	M-020
			Cost of water	KL	18.000	55.58	1000.36	M-195
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	134.400	1681.07	225936.09	M-015
			9.5 mm to 2.36 mm @ 25 per cent	cum	96.000	1681.07	161382.92	M-017
			2.36 mm below @ 40 per cent	cum	153.600	896.55	137709.57	M-020
			Cost of water	KL	18.000	55.58	1000.36	M-195
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	134.400	1681.07	225936.09	M-016
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	48.000	1681.07	80691.46	M-018
			2.36 mm below @ 52.5 per cent	cum	201.600	896.55	180743.81	M-020
			Cost of water	KL	18.000	55.58	1000.36	M-195

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.1B		**(i)**	**Rate per cum for grading-I Material**					
			d) Overhead charges @ 8% on (a+b+c)				43674.21	
			e) Contractor's profit @ 10% on (a+b+c+d)				58960.19	
			Cost for 300 cum = a+b+c+d+e				648562.07	
			Rate per cum = (a+b+c+d+e)/300				2161.87	
						say	***2162.00***	
							2162.00	
4.1B		**(ii)**	**Rate per cum for grading-II Material**					
			d) Overhead charges @ 8% on (a+b+c)				44930.83	
			e) Contractor's profit @ 10% on (a+b+c+d)				60656.62	
			Cost for 300 cum = a+b+c+d+e				667222.78	
			Rate per cum = (a+b+c+d+e)/300				2224.08	
						say	***2224.00***	
							2224.00	
4.1B		**(iii)**	**Rate per cum for grading-III Material**					
			d) Overhead charges @ 8% on (a+b+c)				41918.25	
			e) Contractor's profit @ 10% on (a+b+c+d)				56589.64	
			Cost for 300 cum = a+b+c+d+e				622486.00	
			Rate per cum = (a+b+c+d+e)/300				2074.95	
						say	***2075.00***	
							2075.00	
		Note	Any one of the grading for material may be adopted as per design					
4.2	**401**		**Granular Sub-Base with Coarse Graded Material (Table:-400- 2)**					
			Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.400	329.34	131.73	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	8.000	152.91	1223.25	L-13
			b) Machinery					
			Mortar Grader 110 HP @ 50 cum per hour	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8 -10 tonne	hour	6.000	1671.38	10028.28	P&M-059
			Water tanker 6 KL capacity	hour	3.000	517.53	1552.58	P&M-060
			c) Material					
			For coarse graded Granular sub-base Materials per table 400-2					
			For grading-I Material					
			53 mm to 26.5 mm @ 35 per cent	cum	134.400	1402.31	188470.83	M-029
			26.5 mm to 4.75 mm @ 45 per cent	cum	172.800	1661.08	287034.05	M-026
			2.36 mm below @ 20 per cent (Coarse Sand)	cum	76.800	861.26	66144.82	M-022
			Cost of water	KL	18.000	55.58	1000.36	M-195

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			OR					
			For Grading-II Material					
			26.5 mm to 4.75 mm @ 75 per cent	cum	288.000	1661.08	478390.09	M-026
			2.36 mm below @ 25 per cent	cum	96.000	861.26	82681.03	M-022
			Cost of water	KL	18.000	55.58	1000.36	M-195
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 66 per cent	cum	255.000	1684.60	429573.18	M-025
			2.36 mm below @ 34 per cent	cum	129.000	861.26	111102.63	M-022
			Cost of water	KL	18.000	55.58	1000.36	M-195
4.2		**(i)**	**Rate per cum for grading-I Material**					
			d) Overhead charges @ 8% on (a+b+c)				45747.28	
			e) Contractor's profit @ 10% on (a+b+c+d)				61758.83	
			Cost for 300 cum = a+b+c+d+e				679347.09	
			Rate per cum = (a+b+c+d+e)/300				2264.49	
						say	***2264.00***	
							2264.00	
4.2		**(ii)**	**Rate per cum for grading-II Material**					
			d) Overhead charges @ 8% on (a+b+c)				47300.99	
			e) Contractor's profit @ 10% on (a+b+c+d)				63856.34	
			Cost for 300 cum = a+b+c+d+e				702419.73	
			Rate per cum = (a+b+c+d+e)/300				2341.40	
						say	***2341.00***	
							2341.00	
4.2		**(iii)**	**Rate per cum for grading-III Material**					
			d) Overhead charges @ 8% on (a+b+c)				45669.37	
			e) Contractor's profit @ 10% on (a+b+c+d)				61653.65	
			Cost for 300 cum = a+b+c+d+e				678190.11	
			Rate per cum = (a+b+c+d+e)/300				2260.63	
						say	***2261.00***	
							2261.00	
		Note	Any one of the grading for material may be adopted as per design					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.3	**402**		**Lime Stabilisation for Improving Sub-grade**					
			Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 3 per cent slaked lime 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					
			Unit = cum					
			Taking output = 300 cum (525 tonne)					
		A	**By Mechanical Means**					
			a) Labour					
			Mate	day	0.360	329.34	118.56	L-12
			Skilled mazdoor for alignment and geometrics	day	1.000	244.65	244.65	L-15
			Mazdoor for spraying lime	day	8.000	152.91	1223.25	L-13
			b) Machinery					
			Tractor with ripper and rotavator attachments @ 60 cum per hour for ripping and 25 cum per hour for mixing	hour	12.000	517.53	6210.34	P&M-055
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8 - 10 tonne capacity	hour	6.00x0.65*	1671.38	6518.38	P&M-059
			Water tanker 6 KL capacity	hour	12.000	517.53	6210.34	P&M-060
			c) Material					
			Lime at site	tonne	15.750	9571.33	150748.41	M-194
			Cost of water	KL	72.000	55.58	4001.43	M-195
			d) Overhead charges @ 8% on (a+b+c)				15283.29	
			e) Contractor's profit @ 10% on (a+b+c+d)				20632.44	
			Cost for 300 cum= a+b+c+d+e				226956.87	
			Rate per cum =(a+b+c+d+e)/300				756.52	
						say	***757.00***	
							757.00	
		Note	* Though vibratory roller is required only for 3 hours as per norms, but the same has to be available at site for 6 hours as other machines for spreading and mixing will take 6 hours. The usage rates of roller have been multiplied with a factor of 0.65.					
4.3		**B**	**By Manual Means**					
			Unit = cum					
			Taking output = 150 cum (263 tonnes)					
			a) Labour					
			Mate	day	1.440	329.34	474.24	L-12
			Mazdoor skilled	day	1.000	244.65	244.65	L-15
			Mazdoor	day	35.000	152.91	5351.71	L-13
			b) Machinery					
			Vibratory roller 8 - 10 tonne @ 60 cum per hour	hour	2.500	1671.38	4178.45	P&M-059
			Water tanker 6 KL capacity	hour	6.000	517.53	3105.17	P&M-060
			c) Material					
			Lime at site	tonne	8.000	9571.33	76570.62	M-194
			Cost of water	KL	36.000	55.58	2000.72	M-195
			d) Overhead charges @ 8% on (a+b+c)				7354.04	
			e) Contractor's profit @ 10% on (a+b+c+d)				9927.96	
			Cost for 150 cum= a+b+c+d+e				109207.56	
			Rate per cum =(a+b+c+d+e)/150				728.05	
						say	***728.00***	
							728.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.4	**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 per cent slaked lime with minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98 per cent of the max dry density to form a layer of sub base.					
			Unit = cum					
			Taking output = 300 cum (525 tonnes)					
			a) Labour					
			Mate	day	0.480	329.34	158.08	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	10.000	152.91	1529.06	L-13
			b) Machinery					
			Excavator 0.90 cum bucket capacity	hour	6.000	1621.98	9731.88	P&M-026
			Tipper for carriage of soil	tonne.km	525 x L	70.57	111150.90	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				11115.09	
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8 - 10 tonne	hour	6.000	1671.38	10028.28	P&M-059
			Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	506.94	6083.31	P&M-054
			Water tanker 6 KL capacity	hour	12.000	517.53	6210.34	P&M-060
			c) Material					
			Lime at site	tonne	15.750	9571.33	150748.41	M-194
			Cost of water	KL	72.000	55.58	4001.43	M-195
			d) Overhead charges @ 8% on (a+b+c)				26160.95	
			e) Contractor's profit @ 10% on (a+b+c+d)				35317.28	
			Cost for 300 cum = a+b+c+d+e				388490.09	
			Rate per cum= (a+b+c+d+e)/300				1294.97	
						say	***1295.00***	
							1295.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.5	**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.					
			Unit = cum					
			Taking output = 300 cum (525 tonnes)					
			For 4 per cent quantity of cement by weight of soil					
			a) Labour					
			Mate	day	0.480	329.34	158.08	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	10.000	152.91	1529.06	L-13
			b) Machinery					
			Excavator 0.90 cum bucket capacity	hour	6.000	1621.98	9731.88	P&M-026
			Tipper for carriage of soil	tonne.km	525 x L	4.12	6483.80	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				648.38	
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8 - 10 tonne	hour	6.000	1671.38	10028.28	P&M-059
			Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	506.94	6083.31	P&M-054
			Water tanker 6 KL capacity	hour	12.000	517.53	6210.34	P&M-060
			c) Material					
			Cement at site (@ 4 per cent of 525 tonne)	tonne	21.000	8939.12	187721.52	M-086
			Cost of water	KL	72.000	55.58	4001.43	M-195
			d) Overhead charges @ 8% on (a+b+c)				19908.09	
			e) Contractor's profit @ 10% on (a+b+c+d)				26875.93	
			Cost for 300 cum = a+b+c+d+e				295635.18	
			Rate per cum= (a+b+c+d+e)/300				985.45	
						say	***985.00***	
							985.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.6	**403**		**Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4in 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.					
			Unit = cum					
			Taking output = 300 cum (600 tonnes)					
			Quantity of cement assumed as 4 per cent of quantity of crushed rock by weight.					
			a) Labour					
			Mate	day	0.480	329.34	158.08	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	10.000	152.91	1529.06	L-13
			b) Machinery					
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8 - 10 tonne	hour	6.000	1671.38	10028.28	P&M-059
			Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	506.94	6083.31	P&M-054
			Water tanker 6 KL capacity	hour	10.000	517.53	5175.28	P&M-060
			c) Material					
			Cement at site @ 4 per cent by weight of crushed aggregate (600 tonne)	tonne	24.000	8939.12	214538.88	M-086
			Grading of material for sub-base course					
			37.5 mm to 9.5 mm @ 55 per cent	cum	211.200	1566.98	330946.32	M-014
			9.5 mm to 4.75 mm @ 20 per cent	cum	76.800	1681.07	129106.34	M-025
			4.75 mm to 75 micron @ 25 per cent	cum	96.000	1681.07	161382.92	M-019
			Cost of water	KL	60.000	55.58	3334.53	M-195
			or					
			Grading of material for Base course					
			37.5 mm to 9.5 mm @ 32.5 per cent	cum	124.800	1508.17	188219.70	M-028
			9.5 mm to 4.75 mm @ 5 per cent	cum	19.200	1684.60	32344.33	M-025
			4.75 mm to 75 micron @ 62.5 per cent	cum	240.000	1243.53	298446.17	M-023
			Cost of water	KL	60.000	55.58	3334.53	M-195
4.6		**(i)**	**For Sub-Base course**					
			d) Overhead charges @ 8% on (a+b+c)				70283.05	
			e) Contractor's profit @ 10% on (a+b+c+d)				94882.11	
			Cost for 300 cum = a+b+c+d+e				1043703.24	
			Rate per cum = (a+b+c+d+e)/300				3479.01	
						say	***3479.00***	
			Add extra cost of VAT on Materials				***3479.00***	
4.6		**(ii)**	**For Base course**					
			d) Overhead charges @ 8% on (a+b+c)				62089.02	
			e) Contractor's profit @ 10% on (a+b+c+d)				83820.17	
			Cost for 300 cum = a+b+c+d+e				922021.89	
			Rate per cum = (a+b+c+d+e)/300				3073.41	
						say	***3073.00***	
							3073.00	
		Note	Quantities of aggregates provided under 'c' above are uncompacted quantities.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.7	**404.3.1**		**Making 50 mm x 50 mm Furrows**					
			Making 50 mm x 50 mm furrows, 25mm/ 50mm deep, 45^0 C to the center line of the road and at one metre interval in the existing thin bituminous wearing coarse including sweeping and disposal of excavated material within 1000 metres lead					
			Unit = sqm					
			Taking output = 30 m x 7 m = 210 sqm					
		(i)	**25mm deep furrow cutting**					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Tractor-trolley	hour	0.200	379.91	75.98	P&M-053
			c) Overhead charges @ 8% on (a+b)				32.65	
			d) Contractor's profit @ 10% on (a+b+c)				44.08	
			Cost for 210 sqm= a+b+c+d				484.87	
			Rate per sqm =(a+b+c+d)/210				2.31	
						say	***2.30***	
		(ii)	**50mm deep furrow cutting**					
			a) Labour					
			Mate	day	0.160	329.34	52.69	L-12
			Mazdoor	day	4.000	152.91	611.62	L-13
			b) Machinery					
			Tractor-trolley	hour	0.400	379.91	151.97	P&M-053
			c) Overhead charges @ 8% on (a+b)				65.30	
			d) Contractor's profit @ 10% on (a+b+c)				88.16	
			Cost for 210 sqm= a+b+c+d				969.74	
			Rate per sqm =(a+b+c+d)/210				4.62	
						say	***4.60***	
4.8	**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					
			Unit = cum					
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.920	329.34	302.99	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	21.000	152.91	3211.03	L-13
			b) Machinery					
			Motor Grader 110 HP	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8-10 tonnes @ 60 cum per hour	hour	6.000	1671.38	10028.28	P&M-059
			Water tanker 6 KL capacity	hour	18.000	517.53	9315.50	P&M-060
			c) Material					
			Screening type 'B' or coarse sand	cum	720.000	1176.20	846864.00	M-004
			Cost of water	KL	108.000	55.58	6002.15	M-195
			d) Overhead charges @ 8% on (a+b+c)				71358.32	
			e) Contractor's profit @ 10% on (a+b+c+d)				96333.74	
			Cost for 600 cum = a+b+c+d+e				1059671.09	
			Rate per cum = (a+b+c+d+e)/600				1766.12	
						say	***1766.00***	
							1766.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9	404		**Water Bound Macadam**					
			Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with 3 wheeled steel/ vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.					
		A	**By Manual Means**					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	10.080	329.34	3319.71	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	250.000	152.91	38226.50	L-13
			b) Machinery					
			Vibratory roller 8 - 10 tonne @ 60cum per hour	hour	6.000	1671.38	10028.28	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hour	hour	12.000			
			Water tanker 6 KL capacity	hour	24.000	517.53	12420.67	P&M-060
			c) Material (Refer table 400 - 7, 8 & 9)					
4.9A		(i)	**Grading-I**					
			Aggregate					
			Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	1411.44	614823.26	M-039
			Stone Screening					
			Type A 13.2 mm for **grading-I** @ 0.27 cum per 10 sqm	cum	97.200	1587.87	154340.96	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading-I** @ 0.30 cum per 10 sqm	cum	108.000	687.37	74236.10	M-007
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	687.37	19796.29	M-007
			Cost of water	KL	144.000	55.58	8002.86	M-195
4.9A (i)		(a)	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 8% on (a+b+c)				60923.73	
			e) Contractor's profit @ 10% on (a+b+c+d)				82247.04	
			Cost for 360 cum = a+b+c+d+e				904717.46	
			Rate per cum = (a+b+c+d+e)/360				2513.10	
						say	***2513.00***	
							2513.00	
			OR					
4.9A (i)		(b)	**Using Scrining Type-A (13.2mm agg.) with binding material**					
			d) Overhead charges @ 8% on (a+b+c)				68915.83	
			e) Contractor's profit @ 10% on (a+b+c+d)				93036.37	
			Cost for 360 cum = a+b+c+d+e				1023400.04	
			Rate per cum = (a+b+c+d+e)/360				2842.78	
						say	***2843.00***	
							2843.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9A		(ii)	**Grading-II**					
			Aggregate					
			Grading-II 63 mm to 45 mm /Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	1470.25	640440.90	M-038 / M-036
			Stone Screening					
			Type A 13.2 mm for grading-II @ 0.12 cum per 10 sqm	cum	57.600	1587.87	91461.31	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading II &III** @ 0.22 cum per 10 sqm	cum	105.590	687.37	72579.53	M-007
			OR					
			Type B11.2 mm for grading-III @ 0.20 cum per 10 sqm	cum	96.010	1529.06	146805.05	M-041
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	687.37	19796.29	M-007
			Cost of water	KL	144.000	55.58	8002.86	M-195
4.9A (ii)		(a)	**Using Screening Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 8% on (a+b+c)				62840.62	
			e) Contractor's profit @ 10% on (a+b+c+d)				84834.84	
			Cost for 360 cum = a+b+c+d+e				933183.22	
			Rate per cum = (a+b+c+d+e)/360				2592.18	
						say	***2592.00***	
			Add extra cost of VAT on Materials				***2592.00***	
			OR					
4.9A (ii)		(b)	**Using Scrining Type-A (13.2mm agg.) with binding material**					
			d) Overhead charges @ 8% on (a+b+c)				65934.87	
			e) Contractor's profit @ 10% on (a+b+c+d)				89012.07	
			Cost for 360 cum = a+b+c+d+e				979132.76	
			Rate per cum = (a+b+c+d+e)/360				2719.81	
						say	***2720.00***	
			Add extra cost of VAT on Materials				***2720.00***	
4.9A (ii)		(c)	**Using Scrining Type-B (11.2mm agg.) with binding material**					
			d) Overhead charges @ 8% on (a+b+c)				70362.37	
			e) Contractor's profit @ 10% on (a+b+c+d)				94989.19	
			Cost for 360 cum = a+b+c+d+e				1044881.13	
			Rate per cum = (a+b+c+d+e)/360				2902.45	
						say	***2902.00***	
							2902.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9A		(iii)	**Grading-III**					
			Aggregate					
			Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	1529.06	666058.54	M-036
			Stone Screening					
			Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1529.06	132110.78	M-041
			OR					
			Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	687.37	72579.53	M-007
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	687.37	19796.29	M-007
			Cost of water	KL	144.000	55.58	8002.86	M-195
4.9A (iii)		(a)	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 8% on (a+b+c)				64890.03	
			e) Contractor's profit @ 10% on (a+b+c+d)				87601.54	
			Cost for 360 cum = a+b+c+d+e				963616.97	
			Rate per cum = (a+b+c+d+e)/360				2676.71	
						say	***2677.00***	
			Add extra cost of VAT on Materials				***2677.00***	
			OR					
4.9A (iii)		(b)	**Using Scrining Type-B (11.2mm agg.)**					
			d) Overhead charges @ 8% on (a+b+c)				71236.23	
			e) Contractor's profit @ 10% on (a+b+c+d)				96168.92	
			Cost for 360 cum = a+b+c+d+e				1057858.09	
			Rate per cum = (a+b+c+d+e)/360				2938.49	
						say	***2938.00***	
							2938.00	
			(Anyone of the aggregate grading, screening and binding material may be used as per design)					
4.9		B	**By Mechanical Means:**					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.680	329.34	223.95	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	15.000	152.91	2293.59	L-13
			b) Machinery					
			Motor grader 110 HP @ 50cum/hr. for spreading	hour	7.200	2627.63	18918.94	P&M-032
			Vibratory roller 8-10 tonnes @ 60cum/hr.	hour	6.000	1671.38	10028.28	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
			Water tanker 6 KL capacity	hour	24.000	517.53	12420.67	P&M-060
			c) Material (Refer table 400 - 7, 8 & 9)					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9B		(i)	**Grading-I**					
			Aggregate					
			Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	1411.44	614823.26	M-039
			Stone Screening					
			Type A 13.2 mm for **grading-I** @ 0.27 cum per 10 sqm	cum	97.200	1587.87	154340.96	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading-I** @ 0.30 cum per 10 sqm	cum	108.000	687.37	74236.10	M-007
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	687.37	19796.29	M-007
			Cost of water	KL	144.000	55.58	8002.86	M-195
4.9B (i)		(a)	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 8% on (a+b+c)				59314.96	
			e) Contractor's profit @ 10% on (a+b+c+d)				80075.19	
			Cost for 360 cum = a+b+c+d+e				880827.11	
			Rate per cum = (a+b+c+d+e)/360				2446.74	
						say	***2447.00***	
							2447.00	
			OR					
4.9B (i)		(b)	**Using Scrining Type-A (13.2mm agg.) with binding material**					
			d) Overhead charges @ 8% on (a+b+c)				67307.05	
			e) Contractor's profit @ 10% on (a+b+c+d)				90864.52	
			Cost for 360 cum = a+b+c+d+e				999509.68	
			Rate per cum = (a+b+c+d+e)/360				2776.42	
						say	***2776.00***	
							2776.00	
4.9B		(ii)	**Grading-II**					
			Aggregate					
			Grading-II 63 mm to 45 mm /Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	1470.25	640440.90	M-038 / M-036
			Stone Screening					
			Type A 13.2 mm for grading-II@ 0.12 cum per 10 sqm	cum	57.600	1587.87	91461.31	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading II &III** @ 0.22 cum per 10 sqm	cum	105.590	687.37	72579.53	M-007
			OR					
			Type B 11.2 mm for grading-III @ 0.20 cum per 10 sqm	cum	96.010	1529.06	146805.05	M-041
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	687.37	19796.29	M-007
			Cost of water	KL	144.000	55.58	8002.86	M-195

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9B (ii)		(a)	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 8% on (a+b+c)				61231.84	
			e) Contractor's profit @ 10% on (a+b+c+d)				82662.99	
			Cost for 360 cum = a+b+c+d+e				909292.86	
			Rate per cum = (a+b+c+d+e)/360				2525.81	
						say	***2526.00***	
							2526.00	
			OR					
4.9B (ii)		(b)	**Using Scrining Type-A (13.2mm agg.) with binding material**					
			d) Overhead charges @ 8% on (a+b+c)				64326.09	
			e) Contractor's profit @ 10% on (a+b+c+d)				86840.22	
			Cost for 360 cum = a+b+c+d+e				955242.41	
			Rate per cum = (a+b+c+d+e)/360				2653.45	
						say	***2653.00***	
			Add extra cost of VAT on Materials				***2653.00***	
4.9B (ii)		(c)	**Using Scrining Type-B (11.2mm agg.) with binding material**					
			d) Overhead charges @ 8% on (a+b+c)				68753.59	
			e) Contractor's profit @ 10% on (a+b+c+d)				92817.34	
			Cost for 360 cum = a+b+c+d+e				1020990.77	
			Rate per cum = (a+b+c+d+e)/360				2836.09	
						say	***2836.00***	
			Add extra cost of VAT on Materials				***2836.00***	
4.9B		(iii)	**Grading-III**					
			Aggregate					
			Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	1529.06	666058.54	M-036
			Stone Screening					
			Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1529.06	132110.78	M-041
			OR					
			Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	687.37	72579.53	M-007
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	687.37	19796.29	M-007
			Cost of water	KL	144.000	55.58	8002.86	M-195
4.9B (iii)		(a)	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 8% on (a+b+c)				63281.25	
			e) Contractor's profit @ 10% on (a+b+c+d)				85429.69	
			Cost for 360 cum = a+b+c+d+e				939726.61	
			Rate per cum = (a+b+c+d+e)/360				2610.35	
						say	***2610.00***	
			Add extra cost of VAT on Materials				***2610.00***	
			OR					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.9B (iii)		(b)	**Using Scrining Type-B (11.2mm agg.) with binding material**					
			d) Overhead charges @ 8% on (a+b+c)				69627.46	
			e) Contractor's profit @ 10% on (a+b+c+d)				93997.07	
			Cost for 360 cum = a+b+c+d+e				1033967.73	
			Rate per cum = (a+b+c+d+e)/360				2872.13	
						say	***2872.00***	
							2872.00	
		Note	As three wheeled smooth rollers are also very commonly used, the same has been provided as an alternative.					
4.10	**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 400.7 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.					
			Unit = cum					
			Taking output =360 cum					
			a) Labour					
			Mate	day	4.160	329.34	1370.04	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor for crushing broken cement concrete pavement/slabs into aggregate	day	102.000	152.91	15596.41	L-13
			b) Machinery					
			Motor Grader,110 HP @ 50 cum/hr.	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8 - 10 tonne@ 60 cum per hour	hour	6.000	1671.38	10028.28	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Tipper 10 tonne capacity	tonne.km	720 x L	70.57	152435.52	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				15243.55	
			Water tanker 6 KL capacity with 5 km lead @ 1 trip per hour	hour	12.000	517.53	6210.34	P&M-060

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) Material					
			Material available from dismantled concrete slab after crushing / breaking and only carriage is required to be provided					
			Cost of water	KL	72.000	55.58	4001.43	M-195
			d) Overhead charges @ 8% on (a+b+c)				18076.86	
			e) Contractor's profit @ 10% on (a+b+c+d)				24403.76	
			Cost for 360 cum = a+b+c+d+e				268441.34	
			Rate per cum = (a+b+c+d+e)/360				745.67	
						say	***746.00***	
			With Vibratory Roller				***746.00***	
			With Smooth 3 wheeled Steel Roller				***739.00***	
		Note	1. It is assumed that dismantling of concrete slab/pavement has been considered separately. Hence same is not added in this analysis. Only labour for crushing the dismantled slab into aggregate has been added. Carriage from stock pile to work site has been provided with a lead of L km.					
			2. In case of breaking of slabs is done locally without involvement of transportation, the provision of tipper, front end loader and loading/unloading charges may be deleted.					
			3. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative.					
4.11	**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					
			Unit = sqm					
			Taking output = 7500 sqm					
			a) Labour					
			Mate	day	0.560	329.34	184.43	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	12.000	152.91	1834.87	L-13
			b) Machinery					
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	6.000	396.38	2378.28	P&M-031
			Hydraulic self propelled chips spreader	hour	6.000	2799.36	16796.14	P&M-025
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Tipper 10 tonne capacity	hour	6.000	491.65	2949.91	P&M-048
			Vibratory roller 8 -10 tonnes @ 30 cum per hour	hour	6.00x0.65*	1671.38	6518.38	P&M-059
			Bitumen pressure distributor @ 1750 sqm per hour	hour	4.280	1122.09	4802.57	P&M-004
			c) Material					
			Crushed stone aggregate 11.2 mm size	cum	97.500	1529.06	149083.35	M-051
			Bitumen (60-70 grade)	tonne	0.250	40000.00	10000.00	M-073
			d) Overhead charges @ 8% on (a+b+c)				15988.58	
			e) Contractor's profit @ 10% on (a+b+c+d)				21584.59	
			Cost for 7500 sqm = a+b+c+d+e				237430.46	
			Rate per sqm = (a+b+c+d+e)/7500				31.66	
						say	***31.70***	
							12.30	
		Note	Though vibratory roller is required only for 3 hours as per norms, the same is required to be available at site for 6 hours to match with other machines. The usage rates of vibratory roller may be multiplied with a factor of 0.65.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.12	**406**		**Wet Mix Macadam**					
			Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.					
			Unit = cum					
			Taking output = 225 cum (495 tonnes)					
			a) Labour					
			Mate	day	0.480	329.34	158.08	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	10.000	152.91	1529.06	L-13
			b) Machinery					
			Wet mix plant of 75 tonne hourly capacity	hour	6.600	1591.40	10503.23	P&M-092
			Electric generator 125 KVA	hour	6.000	979.77	5878.65	P&M-018
			Front end loader 1 cum capacity	hour	6.000	803.34	4820.07	P&M-017
			Paver finisher	hour	6.000	1003.30	6019.79	P&M-035
			Vibratory roller 8 - 10 tonne	hour	6x0.65	1671.38	6518.38	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000			
			Water tanker 6 KL capacity	hour	3.000	517.53	1552.58	P&M-060
			Tipper	tonne.km	495 x L	4.12	6113.30	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				611.33	
			c) Material (Table 400-11)					
			45 mm to 22.4 mm@ 30 per cent	cum	89.100	1587.87	141479.22	M-034
			22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	1529.06	181652.33	M-031
			2.36 mm to 75 micron@ 30 per cent	cum	89.100	861.26	76738.33	M-022
			Cost of water	KL	18.000	55.58	1000.36	M-195
			d) Overhead charges @ 8% on (a+b+c)				35605.12	
			e) Contractor's profit @ 10% on (a+b+c+d)				48066.91	
			Cost for 225 cum = a+b+c+d+e				528736.04	
			Rate per cum = (a+b+c+d+e)/225				2349.94	
						say	***2350.00***	
							2350.00	
		Note	1. Though vibratory roller is required only for 3 hours as per norms, the same is required to be available at site for 6 hours to match with other machines. The usage rates of vibratory roller may be multiplied with a factor of 0.65					
			2. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative which can be used if the thickness of individual layer does not exceed 100 mm.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.13	**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					
			Unit = cum					
			Taking output =21 cum					
			a) Labour					
			Mate	day	0.240	329.34	79.04	L-12
			Mazdoor	day	6.000	152.91	917.44	L-13
			b) Machinery					
			Water tanker 6 KL with 5 km lead and 1 trip per hour	hour	1.000	517.53	517.53	P&M-060
			Plate compactor @ 3.5 cum per hour	hour	6.000	256.41	1538.47	P&M-086
			c) Material					
			Cost of water	KL	6.000	55.58	333.45	M-195
			d) Overhead charges @ 8% on (a+b+c)				270.87	
			e) Contractor's profit @ 10% on (a+b+c+d)				365.68	
			Cost for 21 cum = a+b+c+d+e				4022.48	
			Rate per cum = (a+b+c+d+e)/21				191.55	
						say	***192.00***	
							192.00	
		Note	This analysis provides for median and island with earthen top. In case the surface is required to be turfed or planted with shrubs, the same is required to be provided separately as per analysis given in the chapter on horticulture. In case granular fill is required to be paved, quantities of paving are required to be calculated as per approved design and paid separately.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.14	**407**		**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 407					
			Unit = cum					
			Taking output = 21 cum					
			a) Labour					
			Mate	day	0.160	329.34	52.69	L-12
			Mazdoor	day	4.000	152.91	611.62	L-13
			b) Machinery					
			Water tanker with 5 km lead	hour	1.000	517.53	517.53	P&M-060
			Plate Compactor @ 3.5 cum per hour	hour	6.000	256.41	1538.47	P&M-086
			Hydraulic Excavator1.0 cum bucket capacity @60 cum per hour	hour	0.500	1621.98	810.99	P&M-026
			Tipper 10 tonne capacity	tonne.km	52.5 x L	4.12	648.38	Lead =3 km & P&M-047
			Add 10 per cent of cost of transportation to cover cost of loading and unloading				64.84	
			c) Material					
			Cost of water	KL	6.000	55.58	333.45	M-195
			d) Overhead charges @ 8% on (a+b+c)				366.24	
			e) Contractor's profit @ 10% on (a+b+c+d)				494.42	
			Cost for 21 cum = a+b+c+d+e				5438.64	
			Rate per cum = (a+b+c+d+e)/ 21				258.98	
						say	***259.00***	
							259.00	
		Note	This analysis provides for median and island with earthen top. In case the surface is required to be turfed or planted with shrubs, the same is required to be provided separately as per analysis given in the chapter on horticulture. In case surface finish is of hard type, the same may be provided separately as per approved design.					
4.15			**Construction of Shoulders**					
			A. Earthen Shoulders					
			The rate as applicable for sub-grade construction may be adopted.					
			B. Hard Shoulders					
			Rate as applicable for sub-base and or base may be adopted as per approved design.					
			C. Paved shoulders					
			The rate may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.16	**409**		**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 pre-cast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel..					
			Unit = sqm					
			Taking output = 300 sqm					
			a) Labour					
			Mate	day	1.360	329.34	447.90	L-12
			Mason	day	4.000	352.86	1411.44	L-11
			Mazdoor	day	30.000	152.91	4587.18	L-13
			b) Machinery					
			Vibratory road roller 8 -10 tonnes @60 cum per hour	hour	0.750	1671.38	1253.54	P&M-059
			Water tanker 6 KL capacity @ 1 trip per hour	hour	2.000	517.53	1035.06	P&M-060
			Concrete mixer 0.4/0.28 cum per hour	hour	6.000	237.59	1425.55	P&M-009
			c) Material					
			i) For Granular sub base material					
			53 mm to 26.5 mm @ 35 per cent	cum	20.790	1402.31	29154.08	M-029
			26.5 mm to 4.75 mm @ 45 per cent	cum	26.730	1661.08	44400.58	M-026
			2.36 mm below @ 20 per cent	cum	11.880	861.26	10231.78	M-022
			ii) For cement concrete grade M157.5 cum					
			Aggregate 12 mm crushed @ 0.9 cum of concrete	cum	6.750	1587.87	10718.12	M-052
			Sand @ 0.45 cum/cum of concrete	cum	3.380	1176.20	3975.56	M-005
			Cement	tonne	1.880	8939.12	16805.55	M-086
			iii) For cement plaster 1:3					
			Sand	cum	3.840	1176.20	4516.61	M-005
			Cement	tonne	1.830	8939.12	16358.59	M-086
			iv) Pre-cast cement concrete tiles					
			Tiles size 300 x 300 mm and 25 mm thick	each	3300.000	75.34	248607.51	M-190
			v) RCC pipes					
			Pipes 200 mm dia,2.5 m long for drainage	metre	22.500	986.77	22202.39	M-143
			vi) Cost of water	KL	12.000	55.58	666.91	M-195
			d) Overhead charges @ 8% on (a+b+c)				33423.87	
			e) Contractor's profit @ 10% on (a+b+c+d)				45122.22	
			Cost for 300 sqm = a+b+c+d+e				496344.42	
			Rate per sqm = (a+b+c+d+e)/300				1654.48	
						say	***1654.00***	
							1654.00	

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CHAPTER - 4								
SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS								
Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.12	406		**RAP**					
			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.					
			Unit = cum					
			Taking output = 225 cum (495 tonnes)					
			a) Labour					
			Mate	day	0.480	329.34	158.08	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	10.000	152.91	1529.06	L-13
			b) Machinery					
			Wet mix plant of 75 tonne hourly capacity	hour	6.600	1591.40	10503.23	P&M-092
			Electric generator 125 KVA	hour	6.000	979.77	5878.65	P&M-018
			Front end loader 1 cum capacity	hour	6.000	803.34	4820.07	P&M-017
			Paver finisher	hour	6.000	1003.30	6019.79	P&M-035
			Vibratory roller 8 - 10 tonne	hour	6x0.65	1671.38	6518.38	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000			
			Water tanker 6 KL capacity	hour	3.000	517.53	1552.58	P&M-060
			Tipper	tonne.km	495 x L	70.57	104799.42	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				10479.94	
			c) Material (Table 400-11)					
			Use of Dismantling pavement(@60%)	cum	1213.800		0.00	
			45 mm to 22.4 mm@ 30 per cent	cum	35.640	1587.87	56591.69	M-034
			22.4 mm to 2.36 mm @ 40 per cent	cum	47.520	1529.06	72660.93	M-031
			2.36 mm to 75 micron@ 30 per cent	cum		861.26	0.00	M-022
			Cost of water	KL	18.000	55.58	1000.36	M-195
			Cement @ 1 0 per cent of weight of aggregates.	tonne	8.316	8939.12	74337.72	
			d) Overhead charges @ 8% on (a+b+c)				22640.12	
			e) Contractor's profit @ 10% on (a+b+c+d)				37997.93	
			Cost for 225 cum = a+b+c+d+e				417977.26	
			Rate per cum = (a+b+c+d+e)/225				1857.68	
						say	***1858.00***	
							1858.00	

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CHAPTER - 4								
SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS								
Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.1	401		**Granular Sub-Base with Close Graded Material (Table:- 400-1)**					
		A	**Plant Mix Method**					
			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					
			***Unit* = cum**					
			***Taking output* = 225 cum (450 tonne)**					
			a) Labour					
			Mate	day	0.400	329.34	131.73	L-12
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			Mazdoor	day	8.000	152.91	1223.25	L-13
			b) Machinery					
			Wet mix plant @ 75 tonne capacity per hour	hour	6.000	1591.40	9548.39	P&M-092
			Electric generator 125 KVA	hour	6.000	979.77	5878.65	P&M-018
			Water tanker 6 KL capacity 5 km lead with one tripper hour	hour	4.500	517.53	2328.88	P&M-060
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Tipper 10 tonne	tonne.km	450 x L	70.57	95272.20	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover loading and unloading				9527.22	
			Motor Grader 110 HP	hour	6.000	2627.63	15765.78	P&M-032
			Vibratory roller 8-10 t	hour	6.000	1671.38	10028.28	P&M-059
			c) Material					
			Close graded Granular sub-base Material as per table 400-1					
			For Grading-I Material					
			53 mm to 9.5 mm @ 50 per cent	cum		1449.36	0.00	M-013
			9.5 mm to 2.36 mm @ 20 per cent	cum		1681.07	0.00	M-017
			2.36 mm below @ 30 per cent	cum		896.55	0.00	M-020
			Cost of water	KL		55.58	0.00	M-195
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum		1681.07	0.00	M-015
			9.5 mm to 2.36 mm @ 25 per cent	cum		1681.07	0.00	M-017
			2.36 mm below @ 40 per cent	cum		896.55	0.00	M-020
			Cost of water	KL		55.58	0.00	M-195
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum		1681.07	0.00	M-016
			4.75 mm to 2.36 mm @ 12.5 per cent	cum		1681.07	0.00	M-018
			2.36 mm below @ 52.5 per cent	cum		896.55	0.00	M-020
			Cost of water	KL		55.58	0.00	M-195
4.1A		(i)	**Rate per cum for grading-I Material**					
			d) Overhead charges @ 8% on (a+b+c)				12401.10	
			e) Contractor's profit @ 10% on (a+b+c+d)				16741.49	
			Cost for 225 cum = a+b+c+d+e				184156.34	
			Rate per cum = (a+b+c+d+e)/225				818.47	
						say	***818.00***	
							818.00	

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CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.1	502		**Prime Coat**					
			Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.					
			***Unit* = sqm**					
			***Taking output* = 3500 sqm**					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	396.38	1109.86	P&M-031
			Air compressor 250 cfm	hour	2.800	334.04	935.31	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	2.000	1122.09	2244.19	P&M-004
			Water tanker 6 KL capacity @ 1 tripper hour	hour	1.000	517.53	517.53	P&M-060
			c) Material					
			Bitumen emulsion @ 0.6 kg per sqm	tonne	2.100	33000.00	69300.00	M-076
			Cost of water	KL	6.000	55.58	333.45	M-195
			d) Overhead charges @ 8% on (a+b+c)				5981.80	
			e) Contractor's profit @ 10% on (a+b+c+d)				8075.43	
			Cost for 3500 sqm = a+b+c+d+e				88829.74	
			Rate per sqm = (a+b+c+d+e)/3500				25.38	
						say	***25.00***	
							25.00	
		Note	Bitumen primer has been provided @ 0.60 kg per sqm as per clause 502.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 502.4.3.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.2	503		**Tack Coat**					
			Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom. (on biuminous layer)					
			Unit = sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	396.38	1109.86	P&M-031
			Air compressor 250 cfm	hour	2.800	334.04	935.31	P&M-001
			Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	843.34	1686.67	P&M-016
			c) Material					
			Bitumen emulsion @ 0.2 kg per sqm	tonne	0.700	33000.00	23100.00	M-076
			d) Overhead charges @ 8% on (a+b+c)				2173.12	
			e) Contractor's profit @ 10% on (a+b+c+d)				2933.71	
			Cost for 3500 sqm = a+b+c+d+e				32270.84	
			Rate per sqm = (a+b+c+d+e)/3500				9.22	
						say	***9.00***	
							9.00	
		Note	1. Bitumen emulsion has been provided @ 0.20 kg per sqm as per clause 503.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and actual quantity approved by the Engineer after preliminary trials referred to in clause No. 503.4.3					
			2. An output of 3500 sqm has been considered in case of prime coat and tack coat which can be covered by bituminous courses on the same day.					
5.3	504		**Bituminous Macadam**					
			Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction.					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	329.34	276.64	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	14.000	152.91	2140.68	L-13
			Skilled mazdoor for checking line & levels	day	5.000	244.65	1223.25	L-15
			b) Machinery					
			Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	19495.52	116973.09	P&M-022
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	396.38		P&M-031
			Air compressor 250 cfm	hour	2.200	334.04	734.89	P&M-001
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2753.48	16520.91	P&M-034
			Generator 250 KVA	hour	6.000	1764.30	10585.80	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	70.57	95272.20	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				9527.22	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	676.32	2637.63	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	1671.38	6518.38	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1222.07	4766.08	P&M-045
			c) Material					
			i) Bitumen@ 3.3 per cent of mix	tonne	14.850	40000.00	594000.00	M-073
			weight of mix = 205 x 2.2 = 450 tonne					
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 14.85 tonnes					
			Weight of aggregate = 450 -14.85 = 435.15 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 290.1 cum					
			***Grading I (40 mm nominal size)**					
			37.5 - 25 mm 15 per cent	cum	43.510	1529.06	66529.40	M-049
			25 - 10 mm 45 per cent	cum	130.550	1411.44	184263.49	M-046
			10 - 5 mm 25 per cent	cum	72.530	1529.06	110902.72	M-040
			5 mm and below15 per cent	cum	43.510	1411.44	61411.75	M-030
			or					
			GradingII(19 mm nominal size)					
			25 - 10 mm 40 per cent	cum	116.040	1411.44	163783.50	M-046
			10 - 5 mm 40 per cent	cum	116.040	1529.06	177432.12	M-040
			5 mm and below 20 per cent	cum	58.020	1411.44	81891.75	M-030
			* Any one of the alternative may be adopted as per approved design					
		(i)	**for Grading I (40 mm nominal size)**					
			d) Overhead charges @ 8% on (a+b+c)				103128.34	
			e) Contractor's profit @ 10% on (a+b+c+d)				139223.25	
			Cost for 205 cum = a+b+c+d+e				1531455.80	
			Rate per cum = (a+b+c+d+e)/205 (For Grading I)				7470.52	
						say	***7471.00***	
							7471.00	
		(ii)	**for GradingII(19 mm nominal size)**					
			d) Overhead charges @ 8% on (a+b+c)				103128.34	
			e) Contractor's profit @ 10% on (a+b+c+d)				139223.25	
			Cost for 205 cum = a+b+c+d+e				1531455.80	
			Rate per cum = (a+b+c+d+e)/205 (For Grading-II)				7470.52	
						say	***7471.00***	
							7471.00	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case BM is laid over freshly laid tack coat, provision of Mechanical broom and 2 mazdoors for the same shall be deleted as the same has been included in the cost of tack coat.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.4	505		**Bituminous Penetration Macadam**					
			Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction					
		A	**50 mm thick**					
			Unit = sqm					
			Taking output = 4500 sqm (225 cum)					
			a) Labour					
			Mate	day	0.320	329.34	105.39	L-12
			Mazdoor including for brooming of key aggregates	day	6.000	152.91	917.44	L-13
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour for 4500 x 2 sqm = 9000 sqm	hour	6.000	2799.36	16796.14	P&M-025
			Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.570	1122.09	2883.78	P&M-004
			Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	491.65	4916.52	P&M-048
			Vibratory roller 8 tonnes	hour	6.000	1671.38	10028.28	P&M-059
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			c) Material					
			Bitumen@ 5 kg per sqm	tonne	22.500	40000.00	900000.00	M-073
			Crushed stone coarse aggregate passing 45 mm and retained on 2.8 mm sieve @ 0.06 cum per sqm	cum	270.000	1599.63	431900.64	M-033
			Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.015 cum per sqm	cum	67.500	1529.06	103211.55	M-031
			d) Overhead charges @ 8% on (a+b+c)				118085.53	
			e) Contractor's profit @ 10% on (a+b+c+d)				159415.46	
			Cost for 4500 sqm = a+b+c+d+e				1753570.09	
			Rate per sqm = (a+b+c+d+e)/4500				389.68	
						say	***390.00***	
							390.00	
		Note	2 tippers will be needed to match the capacity of chip spreader and front end loader.					
5.4		**B**	**75 mm thick**					
			Unit = sqm					
			Taking output = 4500 sqm (337.5 cum compacted).					
			a) Labour					
			Mate	day	0.400	329.34	131.73	L-12
			Mazdoor including for brooming of key aggregates	day	8.000	152.91	1223.25	L-13
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour for 4500 x 2 sqm	hour	6.000	2799.36	16796.14	P&M-025
			Bitumen pressure distributor for@ 1750 sqm per hour	hour	2.570	1122.09	2883.78	P&M-004
			Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	491.65	4916.52	P&M-048
			Vibratory roller 8 tonnes	hour	6.000	1671.38	10028.28	P&M-059
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			c) Material					
			Bitumen@ 6.8 kg per sqm	tonne	30.600	40000.00	1224000.00	M-073

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Crushed stone coarse aggregate (loose passing 63 mm and retained on 2.8 mm sieve @ 0.09 cum per sqm	cum	405.000	1529.06	619269.30	M-037
			Key aggregates passing 26.5 mm and retained on 2.8 mm sieve @ 0.018 cum per sqm	cum	81.000	1661.08	134547.21	M-026
			d) Overhead charges @ 8% on (a+b+c)				161528.45	
			e) Contractor's profit @ 10% on (a+b+c+d)				218063.40	
			Cost for 4500 sqm = a+b+c+d+e				2398697.43	
			Rate per sqm = (a+b+c+d+e)/4500				533.04	
						say	***533.00***	
							533.00	
		Note	2 tippers and 2 rollers will be needed to match the capacity of chip spreader and front end loader.					
5.5	**506**		**Built-up-Spray Grout**					
			Providing, laying and rolling of built-up-spray grout layer over prepared base consisting of a two layer composite construction of compacted crushed coarse aggregates using motor grader for aggregates. key stone chips spreader may be used with application of bituminous binder after each layer, and with key aggregates placed on top of the second layer to serve as a Base conforming to the line, grades and cross-section specified, the compacted layer thickness being 75 mm					
			Unit = sqm					
			Taking output = 3000 sqm (225 cum)					
			a) Labour					
			Mate	day	0.400	329.34	131.73	L-12
			Mazdoor including for brooming of key aggregates	day	8.000	152.91	1223.25	L-13
			Mazdoor skilled	day	2.000	244.65	489.30	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour for 3000 x 3 sqm	hour	6.000	2799.36	16796.14	P&M-025
			Bitumen pressure distributor for 3000 x 2 sqm @ 1750 sqm per hour	hour	3.430	1122.09	3848.79	P&M-004
			Tipper 5.5 cum capacity	hour	10.000	491.65	4916.52	P&M-048
			Vibratory roller 8 tonnes	hour	6.000	1671.38	10028.28	P&M-059
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			c) Material					
			Bitumen30 kg per 10 sqm @ 15 kg per 10 sqm for each layer	tonne	9.000	40000.00	360000.00	M-073
			Crushed stone coarse aggregate passing 53 mm and retained on 2.8 mm sieve @ 0.5 cum per 10 sqm for each layer	cum	300.000	1599.63	479889.60	M-035
			Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.000	1529.06	59633.34	M-031
			d) Overhead charges @ 8% on (a+b+c)				75342.16	
			e) Contractor's profit @ 10% on (a+b+c+d)				101711.92	
			Cost for 3000 sqm = a+b+c+d+e				1118831.08	
			Rate per sqm = (a+b+c+d+e)/3000				372.94	
						say	***373.00***	
							373.00	
		Note	2 tippers will be needed to match the capacity of hydraulic chip spreader and front end loader.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.6	507		**Dense Graded Bituminous Macadam**					
			Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per cent 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. 507 complete in all respects					
			Unit = cum					
			Taking output = 195 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	329.34	276.64	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	14.000	152.91	2140.68	L-13
			Skilled mazdoor for checking line & levels	day	5.000	244.65	1223.25	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	19495.52	116973.09	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2753.48	16520.91	P&M-034
			Generator 250 KVA	hour	6.000	1764.30	10585.80	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	4.12	5557.55	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				555.75	
			smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	676.32	2637.63	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	1671.38	6518.38	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1222.07	4766.08	P&M-045
			c) Materials					
			Bitumen @ 4.5 per cent of weight of mix	tonne	20.250	40000.00	810000.00	M-077
			Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 19.13 tonnes					
			Weight of aggregate = 450 -19.13 = 430.87 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 287.25 cum					
			Grading - II 19 mm (Nominal Size)					
			25 - 10 mm 30 per cent	cum	86.160	1411.44	121609.67	M-046
			10 - 5 mm 28 per cent	cum	80.430	1529.06	122982.30	M-040
			5 mm and below 40 per cent	cum	114.900	1411.44	162174.46	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	9571.33	82504.84	M-194
			* Any one of the alternative may be adopted as per approved design					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(ii)	**For GradingII (19 mm nominal size)**					
			d) Overhead charges @ 8% on (a+b+c)				117747.77	
			e) Contractor's profit @ 10% on (a+b+c+d)				158959.49	
			Cost for 195 cum = a+b+c+d+e				1748554.35	
			Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				8966.95	
						say	***8967.00***	
							8967.00	
		Note	*1. Although the roller are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case DBM is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.					
			5. The individual density for each size of aggregates to be used for construction I.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e.. excluding the weight of bitumen. The weight of filler will also be 2 per cent by weight of dry aggregates.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.8	509		**Bituminous Concrete**					
			Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of 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. 509 complete in all respects					
			Unit = cum					
			Taking output = 191 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	329.34	276.64	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	14.000	152.91	2140.68	L-13
			Skilled mazdoor for checking line & levels	day	5.000	244.65	1223.25	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	19495.52	116973.09	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	2753.48	16520.91	P&M-034
			Generator 250 KVA	hour	6.000	1764.30	10585.80	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	4.12	5557.55	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				555.75	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	676.32	2637.63	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	1671.38	6518.38	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1222.07	4766.08	P&M-045
			c) Material					
			i) Bitumen@ 5.4 per cent of weight of mix	tonne	24.300	40000.00	972000.00	M-077
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 22.5 tonnes					
			Weight of aggregate = 450 -22.50 = 427.50 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 285 cum					
			or					
			Grading - II-13 mm (Nominal Size)					
			13.2 - 10 mm30 per cent	cum	85.500	1587.87	135762.89	M-044
			10 - 5 mm 25 per cent	cum	71.250	1529.06	108945.53	M-040
			5 mm and below43 per cent	cum	122.550	1411.44	172971.97	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	9571.33	82504.84	M-194

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.8		(ii)	**for Grading-II (10 mm nominal size)**					
			d) Overhead charges @ 8% on (a+b+c)				131580.88	
			e) Contractor's profit @ 10% on (a+b+c+d)				177634.19	
			Cost for 191 cum = a+b+c+d+e				1953976.13	
			Rate per cum = (a+b+c+d+e)/191 (For Grading-II)				10230.24	
						say	***10230.00***	
							10230.00	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case BC is laid over freshly laid tack coat, provision of mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.					
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e.. excluding the weight of bitumen. The weight of filler will also be 2 per cent by weight of dry aggregates.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
5.2	503		**Tack Coat**					
			Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.(for granular surface)					
			Unit = sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	396.38	1109.86	P&M-031
			Air compressor 250 cfm	hour	2.800	334.04	935.31	P&M-001
			Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	843.34	1686.67	P&M-016
			c) Material					
			Bitumen emulsion @ 0.4 kg per sqm	tonne	1.400	33000.00	46200.00	M-076
			d) Overhead charges @ 8% on (a+b+c)				4021.12	
			e) Contractor's profit @ 10% on (a+b+c+d)				5428.51	
			Cost for 3500 sqm = a+b+c+d+e				59713.64	
			Rate per sqm = (a+b+c+d+e)/3500				17.06	
						say	***17.10***	
							17.00	

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CHAPTER- 6
CEMENT CONCRETE PAVEMENTS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
6.1	*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.					
			Unit = cum					
			Taking output = 450 cum (990 tonne)					
			a) Labour					
			Mate	day	1.120	329.34	368.86	L-12
			Mazdoor skilled	day	6.000	244.65	1467.90	L-15
			Mazdoor	day	22.000	152.91	3363.93	L-13
			b) Machinery					
			Front end loader 1 cum bucket capacity	hour	6.000	803.34	4820.07	P&M-017
			Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	4704.80	28228.80	P&M-068
			Electric generator 100 KVA	hour	6.000	730.42	4382.52	P&M-080
			Paver with electronic sensor	hour	6.000	2753.48	16520.91	P&M-034
			Vibratory roller 8-10 t capacity	hour	8.000	1671.38	13371.04	P&M-059
			Water tanker6 KL capacity	hour	8.000	517.53	4140.22	P&M-060
			Tipper	tonne.km	990 x L	70.57	209598.84	Lead =3 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				20959.88	
			c) Material					
			Crushed stone coarse aggregate of 25 mm and 12.5 mm nominal sizes graded as per table 600-1 @ 0.90 cum/cum of concrete conforming to clause 602.2.4.	cum	405.000	1529.00	619245.00	M-052 and M-054
			Coarse Sand as per IS: 383 @ 0.45 cum/cum of concrete	cum	203.000	1176.20	238768.60	M-004
			Cement @ 150 kg/cum of concrete	tonne	67.500	8939.12	603390.60	M-086
			Cost of water	KL	48.000	55.58	2667.62	M-195
			d) Overhead charges @ 8% on (a+b+c)				141703.58	
			e) Contractor's profit @ 10% on (a+b+c+d)				191299.84	
			Cost for 450 cum = a+b+c+d+e				2104298.21	
			Rate per cum = (a+b+c+d+e)/450				4676.22	
						say	***4676.00***	
							4676.00	
		Note	Quantity provided for aggregate is for estimating purpose. Exact quantity shall be as per mix design.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
6.2	*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					
			Unit = cum					
			Taking output = 1050 cum (2415 tonne)					
			a) Labour					
			Mate	day	2.000	329.34	658.67	L-12
			Mazdoor skilled	day	15.000	244.65	3669.74	L-15
			Mazdoor	day	35.000	152.91	5351.71	L-13
			b) Machinery					
			Road Sweeper @ 1250 sqm per hour	hour	2.800	396.38	1109.86	P&M-031
			Front end loader 1 cum bucket capacity	hour	18.000	803.34	14460.20	P&M-017
			Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6.000	6150.35	36902.10	P&M-067
			Electric generator 250 KVA	hour	6.000	1764.30	10585.80	P&M-081
			Slip form paver with electronic sensor	hour	6.000	2934.62	17607.71	P&M-006
			Water tanker6 KL capacity	hour	36.000	517.53	18631.01	P&M-060
			Transit truck agitator 5 cum capacity.	tonne.km	2415xL	47.05	340862.76	Lead =3 km & P&M-050
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				34086.28	
			Concrete joint cutting machine .	hour	12.000	176.43	2117.16	P&M-083
			Texturing machine .	hour	12.000	940.96	11291.52	P&M-088

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) Material					
			Crushed stone coarse aggregates of 25mm and 12.5mm nominal size @ 0.90 cum/cum of concrete conforming to clause 602.2.4. .	cum	945.000	1529.00	1444905.00	M-052 and M-054
			Sand as per IS: 383 and conforming to clause 602.2.4 @ 0.45 cum/cum of concrete	cum	473.000	1176.20	556342.60	M-004
			Cement 43 grade @ 400 kg/cum of concrete	tonne	414.000	8939.12	3700795.68	M-086
			32 mm mild steel dowel bars of grade S 240	tonne	9.450	56457.60	533524.32	M-132
			16 mm deformed steel tie bars of grade S 415	tonne	1.170	44000.00	51480.00	M-087
			Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	39.99	146966.19	M-169
			Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	16.330	926.26	15125.78	M-147
			Joint sealant	kg	875.000	722.48	632170.74	M-126
			Sealant primer	kg	116.670	617.51	72044.31	M-104
			Plastic sheath,1.25 mm thick for dowel bars	sqm	46.670	43.23	2017.33	M-144
			Curing compound	liter	1850.000	370.50	685430.55	M-097
			Super plastisizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	166.73	345123.54	M-186
			Cost of water	KL	216.000	55.58	12004.30	M-195
			Add 1 per cent of material for cost of miscellaneous materials like tarpauline, Hessian cloth, metal cap, cotton / compressible sponge and cradle for dowel bars, work bridges for men to approach concrete surface without walking over it, cutting blades and bites, minor equipments like scabbling machine, threads, ropes, guide wires and any other unforeseen items.				81979.30	
			d) Overhead charges @ 8% on (a+b+c)				702179.53	
			e) Contractor's profit @ 10% on (a+b+c+d)				947942.37	
			Cost for 1050cum = a+b+c+d+e				10427366.08	
			Rate per cum = (a+b+c+d+e)/1050				9930.82	
						say	***9931.00***	
							9931.00	
		Note	The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.					

CHAPTER-7
GEOSYNTHETICS AND REINFORCED EARTH

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
7.5	**3100**		**Reinforced Earth Structures**					
			Reinforced earth Structures have four main components as under:					
			a) Excavation for foundation, foundation concrete and cement concrete grooved seating in the foundation for facing elements (facia material).					
			b) Facia material and its placement.					
			c) Assembling, joining with facing elements and laying of the reinforcing elements.					
			d) Earth fill with granular material which is to be retained by the wall.					
			Each component is analysed separately as under:					
			considering Average height of wall = 8 m.					
7.5	**3102**	**(i)**	**Assembling, joining and laying of reinforcing elements.**					
		A	**With reinforcing element of steel / Aluminium strips / polymeric strips.**					
			Unit = Running Metre					
			Taking Output = 450 m					
			a) Labour					
			Mate	day	0.360	329.34	118.56	L-12
			Mazdoor	day	6.000	152.91	917.44	L-13
			Mazdoor skilled	day	3.000	244.65	733.95	L-15
			b) Material					
			@ Reinforcement strips 60 mm wide 5 mm thick as per clause 3102.					
			1.Galvanised carbon steel strips	metre	450*1.1	289.82	143458.76	M-159
			or					
			2.Copper Strips	metre	450*1.1	1293.82	640440.90	M-158
			or					
			3.Aluminium Strips	metre	450*1.1	579.63	286917.52	M-162
			or					
			4.Stainless steel strips	metre	450*1.1	776.29	384264.54	M-161
			or					
			5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips	metre	450*1.1	776.29	384264.54	M-160
			@ Any one of the above alternative may be adopted as per approved design.					
			Add 10 per cent of the cost of reinforcing strip towards accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the facia pannels, overlaps, heat bonding or extension.					
		Type 1	**1.Galvanised carbon steel strips**					
			c) Overhead charges @ 8% on (a+b)				11618.30	
			d) Contractor's profit @ 10% on (a+b+c)				14522.87	
			Cost of 450 m = a+b+c+d				171369.87	
			Rate per metre =(a+b+c+d)/450				380.82	
						say	***381.00***	
							384.00	
		Type 2	**2.Copper Strips**					
			c) Overhead charges @ 8% on (a+b)				51376.87	
			d) Contractor's profit @ 10% on (a+b+c)				64221.08	
			Cost of 450 m = a+b+c+d				757808.80	
			Rate per metre =(a+b+c+d)/450				1684.02	
						say	***1684.00***	
							1698.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Type 3	**3.Aluminium Strips**					
			c) Overhead charges @ 8% on (a+b)				23095.00	
			d) Contractor's profit @ 10% on (a+b+c)				28868.75	
			Cost of 450 m = a+b+c+d				340651.21	
			Rate per metre =(a+b+c+d)/450				757.00	
						say	***757.00***	
							763.00	
		Type 4	**4.Stainless steel strips**					
			c) Overhead charges @ 8% on (a+b)				30882.76	
			d) Contractor's profit @ 10% on (a+b+c)				38603.45	
			Cost of 450 m = a+b+c+d				455520.69	
			Rate per metre =(a+b+c+d)/450				1012.27	
						say	***1012.00***	
							1021.00	
		Type 5	**5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips**					
			c) Overhead charges @ 8% on (a+b)				30882.76	
			d) Contractor's profit @ 10% on (a+b+c)				38603.45	
			Cost of 450 m = a+b+c+d				455520.69	
			Rate per metre =(a+b+c+d)/450				1012.27	
						say	***1012.00***	
							1021.00	
7.5(i)		**B**	**With reinforcing elements of synthetic geogrids**					
			Unit = sqm					
			Taking output = 300 sqm					
			a) Labour					
			Mate	day	0.360	329.34	118.56	L-12
			Mazdoor	day	6.000	152.91	917.44	L-13
			Mazdoor skilled	day	3.000	244.65	733.95	L-15
			b) Material					
			Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	300.000	446.37	133910.37	M-187
			Add 10 per cent of the cost of reinforcing elements (synthetic geogrids) for accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the facia pannels, overlaps and other protective elements for synthetic geogrids.				13391.04	
			c) Overhead charges @ 8% on (a+b)				11925.71	
			d) Contractor's profit @ 10% on (a+b+c)				16099.71	
			Cost of 300 sqm of Synthetic geogrids = a+b+c+d				177096.77	
			Rate per sqm = (a+b+c+d)/ 300				590.32	
						say	***590.00***	
							635.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
7.5	3104	(ii)	**Facing elements of RCC**					
			Unit = sqm					
			Taking output = 75 sqm					
			a) Labour					
			Mate	day	0.180	329.34	59.28	L-12
			Mazdoor	day	3.000	152.91	458.72	L-13
			Mazdoor skilled	day	1.500	244.65	366.97	L-15
			b) Machinery					
			Light crane with lifting capacity upto 3 tonne	hour	6.000	374.03	2244.19	P&M-013
			c) Material					
			Pre-cast RCC M-35 facing elements of size as per design and 18 cm thick for 75 sqm. (Refer Item **12.8 (H)**)	cu.m	13.500	6178.00	83403.00	Item 12.8 (H) Case I
			HYSD steel @ 5 kg / sqm (Refer Item 12.6)	tonnes	0.380	66780.00	25376.40	Item 13.6
			Add 2 per cent of cost of facia pannels, for all necessary temporary form work, scaffolding and provision of loops/lugs for lifting of pannels and joining the reinforcing elements.				2175.59	
			d) Overhead charges @ 8% on (a+b)				250.33	
			e) Contractor's profit @ 10% on (a+b+d)				337.95	
			Cost for 75 sqm = a+b+c+d+e				114672.43	
			Rate per sqm = (a+b+c+d+e)/ 75				1528.97	
						say	***1529.00***	
							1529.00	
		Note	1.The specification and construction details to be adopted shall be as per section 3100 of MoRTH Specification.					
			2.Drainage arrangement shall be made as per approved design and drawings.					
			3.The quantity of filler media shall be calculated as per approved design and specifications and shall be priced separately.The rate for same to be adopted from chapter 15.					
			4.Excavation for foundation including foundation concrete and groove in the foundation for seating of bottom most facia panel and capping beam to be calculated as per design and priced separately. The rates for excavation and foundation concrete shall be taken from the chapter 12 & 13 in bridge section.					
			5.The earth fill to be retained is not included in this analysis. The same is to be worked out and provided separately complete as per clause 305.					
	,		6.For compaction of Earthwork, attention is invited to clause 3105.5 of MoRTH Specification.					
			7.Length of reinforcing strips will vary with the height of wall and will be as per approved design and drawings.					
			8.The type of reinforcing elements to be adopted shall be as per approved design and specifications.					
			9.The market rate for supply of reinforcing elements and their accessories are to be ascertained from reputed firms in the field of earth reinforcement.					
			10.The earth fill material shall be clean, free draining, granular with high friction and low cohesion, non-corrosive, coarse grained with not 10 per cent of particles passing 75 micron sieve, free of any deleterious matter, chlorides, salts, acids, alkalies, mineral oil, fungus and microbes and shall be of specified PH value.					
			11.Capping beam is to be priced separately as per approved design. The rate for cement concrete shall be taken from the chapter of sub-structure in bridge section.					
			12.The cost of reinforced earth retaining wall shall include following:					
			(I) Excavation for foundation including backfilling.					
			(ii) Foundation concrete as per approved design.					
			(iii) Cost of facial pannels and their erection .					
			(iv) Cost of reinforcing elements including their fixing and joining with the facial pannels.					
			(v) Drainage arrangement including filter media as per approved design and drawings.					
			13. The compacted earth filling to be retained shall form part of embankment.					

CHAPTER-8
TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.1	408		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, all complete as per clause 408					
			Unit = Running metre					
			Taking output = 360 metre					
		A.	**Using Concrete Mixer**					
			Cement Concrete					
			Cement concrete of grade M20 = 12.60 cum					
			Cement concrete of grade M10 for base= 11.61 cum					
			Total Concrete = **24.21 cu.m**					
			a) Labour					
			Mate	day	0.720	329.34	237.12	L-12
			Mason	day	2.000	352.86	705.72	L-11
			Mazdoor	day	16.000	152.91	2446.50	L-13
			b) Machinery					
			Kerb casting machine @ 60 metres/hour	hour	6.000	334.04	2004.24	P&M-029
			Concrete mixer 0.48/0.28 cum capacity	hour	12.000	237.59	2851.11	P&M-009
			Water tanker6 KL capacity	hour	5.000	517.53	2587.64	P&M-060
			c) Material					
			Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	1529.06	33318.22	M-053
			Coarse sand 30 per cent	cum	10.900	1176.20	12820.58	M-005
			Cement 11 per cent	tonne	5.700	8939.12	50952.98	M-086
			Cost of water	KL	30.000	55.58	1667.26	M-195
			d) Overhead charges @ 8% on (a+b+c)				8767.31	
			e) Contractor's profit @ 10% on (a+b+c+d)				11835.87	
			Cost for 360 meter = a+b+c+d+e				130194.56	
			Rate per metre = (a+b+c+d+e)/360				361.65	
						say	***362.00***	
							362.00	
		B	**Using Concrete Batching and Mixing Plant**					
			Cement Concrete					
			Cement concrete of grade M20 = 12.60 cum					
			Cement concrete of grade M10 for base = 11.61 cum					
			Total Concrete = **24.21 cu.m**					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Mason	day	1.000	352.86	352.86	L-11
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Kerb casting machine @ 60 metres/hour	hour	6.000	334.04	2004.24	P&M-029
			Concrete batching and mixing plant @ 15 cum/hr.	hour	1.600	1870.16	2992.25	P&M-003
			Water tanker6 KL capacity	hour	5.000	517.53	2587.64	P&M-060
			Tipper 5.5 cum capacity	hour	6.000	491.65	2949.91	P&M-048
			c) Material					
			Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	1529.06	33318.22	M-053
			Coarse sand 30 per cent	cum	10.900	1176.20	12820.58	M-004
			Cement 11 per cent	tonne	5.700	8939.12	50952.98	M-086
			Cost of water	KL	30.000	55.58	1667.26	M-195
			d) Overhead charges @ 8% on (a+b+c)				8799.30	
			e) Contractor's profit @ 10% on (a+b+c+d)				11879.06	
			Cost for 360 meter = a+b+c+d+e				130669.65	
			Rate per metre = (a+b+c+d+e)/360				362.97	
						say	***363.00***	
							363.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.4	801		**Retro-Reflectorised Traffic Signs**					
			Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
			Unit = Each					
			Taking output = one traffic sign					
			i) Excavation for foundation	cum	0.216	158.00	34.13	item 3.13 (1) A
			ii) Cement concrete M15 grade	cum	0.120	7004.00	840.48	Item 12.8 (A)
			iii) Painting angle iron post two coats	sqm	0.430	52.00	22.36	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor	day	0.250	152.91	38.23	L-13
			b) Material					
			Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	60.000	1140.000	M-185 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable					
			Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				22.80	
		(i)	90 cm equilateral triangle	sqm	0.350	617.51	216.13	M-061
			or					
		(ii)	60 cm equilateral triangle	sqm	0.156	617.51	96.33	M-061
			or					
		(iii)	60 cm circular	sqm	0.283	617.51	174.75	M-061
			or					
		(iv)	80 mm x 60 mm rectangular	sqm	0.480	617.51	296.40	M-061
			or					
		(v)	60 cm x 45 cm rectangular	sqm	0.270	617.51	166.73	M-061
			or					
		(vi)	60 cm x 60 cm square	sqm	0.360	617.51	222.30	M-061
			or					
		(vii)	90 cm high octagon	sqm	0.672	617.51	414.96	M-061
			c) Machinery					
			Tractor-trolley	hour	0.010	379.91	3.80	P&M-053
		(i)	**90 cm equilateral triangle**					
			d) Overhead charges @ 8% on (a+b+c)				113.94	
			e) Contractor's profit @ 10% on (a+b+c+d)				153.82	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2588.97	
						say	***2589.00***	
							2589.00	
		(ii)	**60 cm equilateral triangle**					
			d) Overhead charges @ 8% on (a+b+c)				104.36	
			e) Contractor's profit @ 10% on (a+b+c+d)				140.88	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2446.65	
						say	***2447.00***	
							2447.00	
		(iii)	**60 cm circular**					
			d) Overhead charges @ 8% on (a+b+c)				110.63	
			e) Contractor's profit @ 10% on (a+b+c+d)				149.35	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2539.82	
						say	***2540.00***	
							2540.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(iv)	**80 mm x 60 mm rectangular**					
			d) Overhead charges @ 8% on (a+b+c)				120.36	
			e) Contractor's profit @ 10% on (a+b+c+d)				162.49	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2684.34	
						say	***2684.00***	
							2684.00	
		(v)	**60 cm x 45 cm rectangular**					
			d) Overhead charges @ 8% on (a+b+c)				109.99	
			e) Contractor's profit @ 10% on (a+b+c+d)				148.48	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2530.28	
						say	***2530.00***	
							2530.00	
		(vi)	**60 cm x 60 cm square**					
			d) Overhead charges @ 8% on (a+b+c)				114.43	
			e) Contractor's profit @ 10% on (a+b+c+d)				154.49	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2596.31	
						say	***2596.00***	
							2596.00	
		(vii)	**90 cm high octagon**					
			d) Overhead charges @ 8% on (a+b+c)				129.85	
			e) Contractor's profit @ 10% on (a+b+c+d)				175.29	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				2825.19	
						say	***2825.00***	
							2825.00	
		Note	1.Any one area of aluminium sheeting given at (i) to (vii) may be adopted as per site requirement and in accordance with IRC : 67					
			2.Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
			3. The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.					
8.5	**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 high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing					
			Unit = sqm					
			Taking output = 0.9 sqm					
			i) Excavation for foundation	cum	0.216	158.00	34.13	Item No. 3.13
			ii) Cement concrete M15 grade	cum	0.120	7004.00	840.48	Item 12.8 (A)
			iii) Painting angle iron post two coats	sqm	0.430	52.00	22.36	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor	day	0.200	152.91	30.58	L-13
			b) Material					
			Mild steel angle iron 75 mm x 75 mm x 6 mm,2.85 metres long	kg	19.000	60.000	1140.00	M-185 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size 0.9 sqm	sqm	0.900	617.51	555.75	M-061
			Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.				33.92	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) Machinery					
			Tractor-trolley	hour	0.020	379.91	7.60	P&M-053
			d) Overhead charges @ 8% on (a+b+c)				141.69	
			e) Contractor's profit @ 10% on (a+b+c+d)				191.28	
			Cost for 0.9 sqm =I+ii+ii+ a+b+c+d+e				3001.09	
			Rate per sqm (for sign having area upto 0.9 sqm) = (I+ii+iii+a+b+c+d+e)/0.90				3334.55	
						say	***3335.00***	
							3335.00	
		Note	I) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately					
			ii) Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
8.6	**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 as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
			Unit = sqm					
			Taking output = 1.50 sqm					
			i) Excavation for foundation	cum	0.430	158.00	67.94	Item No. 3.13
			ii) Cement concrete M15 grade	cum	0.240	7004.00	1680.96	Item 12.8 (A)
			iii) Painting angle iron post 2 coats	sqm	0.860	52.00	44.72	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor	day	0.300	152.91	45.87	L-13
			b) Material					
			Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 metres long, 2 nos	kg	38.000	60.000	2280.00	M-185 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting	sqm	1.500	617.51	926.26	M-061
			Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.				64.13	
			c) Machinery					
			Tractor-trolley	hour	0.020	379.91	7.60	P&M-053
			d) Overhead charges @ 8% on (a+b+c)				266.17	
			e) Contractor's profit @ 10% on (a+b+c+d)				359.33	
			Cost for 1.5 sqm =I+ii+ii+ a+b+c+d+e				5746.28	
			Rate per sqm (for sign having area more than 0.9 sqm) = (i+ii+iii+a+b+c+d+e)/1.50				3830.85	
						say	***3831.00***	
							3831.00	
		Note	i) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately					
			ii) Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.7	802		**Overhead Signs**					
			Providing and erecting overhead signs with a corrosion resistant 2mm thick aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type 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					
		A	**Truss and Vertical Support**					
			Unit = tonne					
			Taking output = 1 tonne					
			a) Labour					
			Mate	day	0.240	329.34	79.04	L-12
			Blacksmith	day	2.000	352.86	705.72	L-02
			Mazdoor including for handling & fixing at site.	day	4.000	152.91	611.62	L-13
			b) Material					
			Aluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	96330.78	101147.32	M-060
			Add 1 per cent on cost of material for nuts, bolts and drilling and welding consumables				1011.47	
			Add 15 per cent on cost of material for fabrication of trusses as per approved design				15323.82	
			c) Machinery					
			Crane 3 tonne capacity	hour	3.000	374.03	1122.09	P&M-013
			Truck	hour	0.500	517.53	258.76	P&M-057
			d) Overhead charges @ 8% on (a+b+c)				9620.79	
			e) Contractor's profit @ 10% on (a+b+c+d)				12988.06	
			Rate per tonne = (a+b+c+d+e)				142868.71	
						say	***142869.00***	
							142869.00	
8.7		B	**Aluminium Alloy Plate for Over Head Sign**					
			Unit = sqm					
			Taking output = 1 sqm					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Blacksmith	day	0.100	352.86	35.29	L-02
			Mazdoor	day	0.150	152.91	22.94	L-13
			b) Material					
			Aluminium alloy plate,2 mm thick, fixed with high intensity grade sheeting vide clause 801.3	sqm	1.000	506.35	506.35	M-059
			Miscellaneous					
			Add 1 per cent of cost of labour for lifting arrangement, like ladders, pulleys, ropes etc				0.65	
			c) Overhead charges @ 8% on (a+b)				45.74	
			d) Contractor's profit @ 10% on (a+b+c)				61.76	
			Rate per sqm = (a+b+c+d)				679.31	
						say	***679.00***	
							679.00	
		Note	1. The cost of excavation and foundation concrete for fixing of vertical support system to be worked out separately as per the approved drawing/design and to be included in the estimate.					
			2. Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been included separately in this chapter.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.8	**803**		**Painting 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					
			Unit = sqm					
			Taking output = 40 sqm					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Painter	day	2.000	352.86	705.72	L-18
			Mazdoor	day	1.000	152.91	152.91	L-13
			b) Material					
			Paint conforming to requirement of clause 803.3.	Litre	6.000	172.90	1037.41	M-138
			Add for scaffolding @ 1 per cent of labour cost where required				8.98	
			c) Overhead charges @ 8% on (a+b)				155.56	
			d) Contractor's profit @ 10% on (a+b+c)				210.01	
			Cost for 40 sqm = a+b+c+d				2310.11	
			Rate per sqm = (a+b+c+d)/40				57.75	
						say	***58.00***	
							58.00	
8.9	**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					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.030	329.34	9.88	L-12
			Painter	day	0.450	352.86	158.79	L-18
			Mazdoor	day	0.250	152.91	38.23	L-13
			b) Material					
			Paint ready mixed approved brand.	Litre	1.250	185.25	231.56	M-137
			Add @ 1 per cent on cost of material for scaffolding				2.32	
			c) Overhead charges @ 8% on (a+b)				35.26	
			d) Contractor's profit @ 10% on (a+b+c)				47.60	
			Cost for 10 sqm = a+b+c+d				523.64	
			Rate per sqm= (a+b+c+d)/10				52.36	
						say	***52.00***	
							52.00	
8.10	**803**		**Painting on Wood Surfaces**					
			Providing and applying two coats of ready mix paint of approved brand on wood surface after thorough cleaning of surface to give an even shade					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.030	329.34	9.88	L-12
			Painter	day	0.500	352.86	176.43	L-18
			Mazdoor	day	0.200	152.91	30.58	L-13
			b) Material					
			Paint ready mixed of approved brand.	Litre	1.500	185.25	277.88	M-137
			Add @ 1 per cent on cost of material for scaffolding				2.78	
			c) Overhead charges @ 8% on (a+b)				39.80	
			d) Contractor's profit @ 10% on (a+b+c)				53.74	
			Cost for 10 sqm = a+b+c+d				591.09	
			Rate per sqm = (a+b+c+d)/10				59.11	
							59.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.090	329.34	29.64	L-12
			Painter	day	0.550	352.86	194.07	L-18
			Mazdoor	day	1.550	152.91	237.00	L-13
			b) Material					
			Road marking Paint as per IS :164	Litre	1.480	172.90	255.89	M-138
			c) Overhead charges @ 8% on (a+b)				57.33	
			d) Contractor's profit @ 10% on (a+b+c)				77.39	
			Cost for 10 sqm = a+b+c+d				851.33	
			Rate per sqm= (a+b+c+d)/10				85.13	
						say	***85.00***	
							85.00	
8.11		**(ii)**	**Up to 10 cm in width**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.070	329.34	23.05	L-12
			Painter	day	0.350	352.86	123.50	L-18
			Mazdoor	day	1.350	152.91	206.42	L-13
			b) Material					
			Road marking paint	Litre	1.480	172.90	255.89	M-138
			c) Overhead charges @ 8% on (a+b)				48.71	
			d) Contractor's profit @ 10% on (a+b+c)				65.76	
			Cost for 10 sqm = a+b+c+d				723.34	
			Rate per sqm = (a+b+c+d)/10				72.33	
						say	***72.00***	
							72.00	
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 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**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.060	329.34	19.76	L-12
			Painter Ist class	day	0.300	352.86	105.86	L-18
			Mazdoor	day	1.250	152.91	191.13	L-13
			b) Material					
			Road marking paint	Litre	0.900	172.90	155.61	M-138
			c) Overhead charges @ 8% on (a+b)				37.79	
			d) Contractor's profit @ 10% on (a+b+c)				51.02	
			Cost for 10 sqm = a+b+c+d				561.17	
			Rate per sqm = (a+b+c+d)/10				56.12	
							56.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.12		**(ii)**	**Up to 10 cm in width**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.070	329.34	23.05	L-12
			Painter Ist class	day	0.350	352.86	123.50	L-18
			Mazdoor	day	1.350	152.91	206.42	L-13
			b) Material					
			Road marking Paint	Litre	0.900	172.90	155.61	M-138
			c) Overhead charges @ 8% on (a+b)				40.69	
			d) Contractor's profit @ 10% on (a+b+c)				54.93	
			Cost for 10 sqm= a+b+c+d				604.20	
			Rate per sqm = (a+b+c+d)/10				60.42	
						say	***60.00***	
							60.00	
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.					
			Unit = sqm					
			Taking output = 640 sqm					
			a) Labour					
			Mate	day	0.500	329.34	164.67	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Road marking machine @ 80 sqm per hour	hour	8.000	123.50	988.01	P&M-043
			Tractor-trolley	hour	8.000	379.91	3039.30	P&M-053
			c) Material					
			Hot applied thermoplastic compound	Litre	2000.000	159.32	318632.58	M-124
			Reflectorising glass beads	kg	200.000	148.20	29640.24	M-157
			d) Overhead charges @ 8% on (a+b+c)				28221.65	
			e) Contractor's profit @ 10% on (a+b+c+d)				38099.23	
			Cost for 640 sqm = a+b+c+d+e				419091.48	
			Rate per sqm = a+b+c+d+e)/640				654.83	
						say	***655.00***	
							655.00	
		Note	1. A sealing primer may be applied in advance on cement concrete pavement to ensure proper bonding. Any laitance and/or curing compound to be removed where paint is required to be applied on concrete surface.					
			2.Cost of painter is already included in hire charges of road marking machine.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.14	**804**		**Kilometre 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)**					
			Unit = Nos.					
			Taking output = 6 Nos.					
			a) M-15 grade of concrete	cum	2.350	7004.00	16459.40	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	22.080	66.780	1474.50	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	1.680	158.00	265.44	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	9.850	58.00	571.30	Item 8.8
			e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	0.50	900.00	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.260	329.34	85.63	L-12
			Mason	day	0.600	352.86	211.72	L-11
			Mazdoor including loading/unloading	day	6.000	152.91	917.44	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	379.91	2279.48	P&M-053
			h) Overhead charges @ 8% on (f+g)				279.54	
			i) Contractor's profit @ 10% on (f+g+h)				377.38	
			Cost for 6 Nos. 5th km stone = a+b+c+ d+e +f+g+h +i				23821.82	
			Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i)/ 6				3970.30	
						say	***3970.00***	
							3970.00	
8.14		**(ii)**	**Ordinary kilometer stone (precast)**					
			Unit = Nos.					
			Taking output = 14 Nos.					
			a) M-15 grade of concrete	cum	3.770	7004.00	26405.08	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	26.320	66.780	1757.65	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	2.770	158.00	437.66	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	11.410	58.00	661.78	Item 8.8
			e) Lettering on km post (average 12 letters of 10 cm height each)	per cm per letter	1680.000	0.50	840.00	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.320	329.34	105.39	L-12
			Mason	day	1.000	352.86	352.86	L-11
			Mazdoor	day	7.000	152.91	1070.34	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	379.91	2279.48	P&M-053
			h) Overhead charges @ 8% on (f+g)				304.65	
			i) Contractor's profit @ 10% on (f+g+h)				411.27	
			Cost for 14 Nos. ordinary km stone = (a+b+ c+d+e+f+g+h+i)				34626.15	
			Rate for each ordinary km stone = (a+b+ c+d+e+f+g+h+j) /14				2473.30	
						say	***2473.00***	
							2473.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.14		(iii)	**Hectometer stone (precast)**					
			Unit = Nos.					
			Taking output = 33 Nos.					
			a) M-15 grade of concrete	cum	1.580	7004.00	11066.32	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	66.000	66.780	4407.48	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	1.390	158.00	219.62	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	6.270	58.00	363.66	Item 8.8
			e) Lettering on km post (average 1 letter of 10 cm height each)	per cm per letter	330.000	0.50	165.00	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.340	329.34	111.97	L-12
			Mason	day	1.500	352.86	529.29	L-11
			Mazdoor	day	7.000	152.91	1070.34	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	379.91	2279.48	P&M-053
			h) Overhead charges @ 8% on (f+g)				319.29	
			i) Contractor's profit @ 10% on (f+g+h)				431.04	
			Cost for 33 Nos. Hectometer stone = (a+b+c+d+e+f+ g+h+i)				20963.49	
			Rate for each Hectometer stone = (a+b +c +d+e+f+ g+h+i) / 33				635.26	
						say	***635.00***	
							635.00	
		Note	The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective chapters.					
8.15	805		**Road Delineators**					
			Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming toIRC-79 and the drawings.					
			Unit = Each					
			Taking output= 30 Nos.					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor for fixing	day	1.000	152.91	152.91	L-13
			b) Material					
			Cost of approved type of delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	30.000	957.43	28722.80	M-091
			Add 10 per cent cost of material for installation				2872.28	
			c) Overhead charges @ 8% on (a+b)				2540.89	
			d) Contractor's profit @ 10% on (a+b+c)				3430.21	
			Cost for 30 Nos. delineators = (a+b+ c+d)				37732.26	
			Rate per delineators = (a+b+c+d) /30				1257.74	
						say	***1258.00***	
							1258.00	
		Note	In case of soft ground, a proper foundation may be provided as per approved design. In case foundation is required to be provided, the items of excavation and foundation concrete are required to be measured and paid separately.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.16	**806**		**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					
			Unit = Each					
			Taking output = 57 Nos.					
			a) M-15 grade of the boundary stone	cum	1.250	7004.00	8755.00	Item 12.8 (A)
			b) Steel reinforcement	kg	79.800	66.780	5329.04	Item 13.6 /1000
			c) Excavation in soil	cum	10.720	158.00	1693.76	Item No. 3.13
			d) Lettering, each 10 cm high	per letter per cm high	2280.000	0.50	1140.00	Item 8.3
			Transportation and fixing					
			e) Labour					
			Mate	day	0.570	329.34	187.72	L-12
			Mazdoor	day	14.250	152.91	2178.91	L-13
			f) Machinery					
			Tractor-trolley	hour	6.000	379.91	2279.48	P&M-053
			g) Material					
			Stone spall	cum	11.970	969.66	11606.82	M-008
			h) Overhead charges @ 8% on (e+f+g)				1300.23	
			i) Contractor's profit @ 10% on (e+f+g+h)				1755.32	
			Cost for 57 Nos. boundary pillar = (a+b +c+d +e+ f+g+h+i)				36226.28	
			Rate for each boundary pillar = (a+b+c+d+e+ f+g+h+i)/57				635.55	
						say	***636.00***	
							636.00	
		Note	In case of soft ground, a proper foundation may be provided as per approved design. In case foundation is required to be provided, the items of excavation and foundation concrete are required to be measured and paid separately.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.17	**807**		**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 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 807					
			Unit = per running metre					
			Taking output = 30 metres					
			a) Labour					
			Mate	day	0.090	329.34	29.64	L-12
			Blacksmith	day	0.250	352.86	88.22	L-02
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Material					
			Barbed wire 335 metres length @ 9.38 kg per 100 metres	kg	31.420	98.80	3104.32	M-062
			MS angle iron 40 mm x 40mm x 6 mm, 23 metres in length @ 3.5 kg per metre	kg	80.500	60.000	4830.00	M-185 /1000
			Add for GI staple binding wire, drilling holes etc. @ 2 per cent of the cost of material				158.69	
			c) Painting					
			Applying two coats of painting on exposed surface of angle iron posts (Rate as per item no. 8.9)	sqm	2.110	52.00	109.72	Item 8.9
			d) Overhead charges @ 8% on (a+b)				681.33	
			e) Contractor's profit @ 10% on (a+b+d)				919.80	
			Cost for 30 metres fencing = a+b+c+d+e				10227.53	
			Rate per metre = (a+b+c+d+e)/30				340.92	
						say	***341.00***	
							341.00	
		Note	Cost of excavation for foundation and foundation concrete to be added separately in the cost estimate as per approved design. The rate for these items may be taken from respective chapters.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.18	**807**		**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 807					
			Unit = per running metre					
			Taking output = 30 metres					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Blacksmith	day	0.400	352.86	141.14	L-02
			Mazdoor	day	2.500	152.91	382.27	L-13
			b) Material					
			Barbed wire 428 metres length @ 9.38 kg per 100 metres	kg	40.150	98.80	3966.85	M-062
			MS angle iron 50 mm x 50 mm x 6 mm,33.8 metres in length @ 4.5 kg per metre	kg	152.000	60.000	9120.00	M-185 /1000
			Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material				261.74	
			c) Painting					
			Applying two coats of painting on exposed surface of angle iron posts	sqm	3.960	52.00	205.92	Item 8.9
			d) Overhead charges @ 8% on (a+b)				1112.92	
			e) Contractor's profit @ 10% on (a+b+d)				1502.44	
			Cost for 30 metres fencing = a+b+c+d+e				16732.80	
			Rate per metre fencing = (a+b+c +d+e)/30				557.76	
						say	***558.00***	
							558.00	
		Note	Cost of excavation for foundation and foundation concrete to be added separately in the cost estimate as per approved design. The rate for these items may be taken from respective chapters.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.20	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					
			Unit = Running metre					
			Taking output = 10metres					
			i) Excavation for foundation (6 Nos)6 x 0.6 x 0.6 x 0.6	cum	1.296	158.00	204.77	Item No. 3.13
			ii) Foundation concrete M-15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	7004.00	4538.59	Item 12.8 (A)
			iii) Painting of pipe	sqm	4.710	52.00	244.92	Item 8.9
			iv) Painting of channel section 6 nos,1.8 metres each 0.2 x 1.8 x 6 = 2.16	sqm	2.160	52.00	112.32	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	329.34	3.29	L-12
			Mazdoor	day	0.250	152.91	38.23	L-13
			Plumber	day	0.010	352.86	3.53	L-02
			b) Material					
			Steel pipe 50 mm external dia as per IS:1239	metre	30.000	203.78	6113.30	M-181
			Medium weight steel channel (ISMC series) 100 mm x 50 mm,10.8 metres length @ 9.2 kg per metre	kg	99.360	60.000	5961.60	M-185 /1000
			Add for drilling holes @ 2 per cent of cost of channels				119.23	
			c) Machinery					
			Tractor-trolley	hour	0.040	379.91	15.20	P&M-053
			d) Overhead charges @ 8% on (a+b+c)				1388.40	
			e) Contractor's profit @ 10% on (a+b+c+d)				1874.34	
			Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e				20617.71	
			Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10				2061.77	
						say	***2062.00***	
							2062.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.22	**809**		**Reinforced Cement Concrete Crash Barrier**					
			Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel 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 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified					
			Unit = Linear metre					
			Taking output = 10 m					
		(i)	**a) M 20 grade concrete**					
			M 20 grade concrete	cum	3.000	7004.00	21012.00	Item 14.1(A)
			b) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor	day	1.000	152.91	152.91	L-13
			c) Material					
			HYSD steel reinforcement including dowel bars	tonne	0.280	44000.00	12320.00	M-087
			Pre-moulded asphalt filler board	sqm	0.320	1049.76	335.92	M-149
			d) Overhead charges @ 8% on (b+c)				1025.76	
			e) Contractor's profit @ 10% on (b+c+d)				1384.78	
			Cost for 10 metre = a+b+c+d+e				36244.54	
			Rate per metre = (a+b+c+d+e)/10				3624.45	
						say	***3624.00***	
							3624.00	
		Note	i) Excavation and backfilling are incidental to work and not to be measured separately.					
			ii) Rate for RCC M 20 may be taken from chapter on super structure.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.23	810		**Metal Beam Crash Barrier**					
	A		**Type - A, "W" : Metal Beam Crash Barrier**					
			Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, 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 810					
			Unit = Running metre					
			Taking output = 4.5 metre length					
			a) Labour					
			Mate	day	0.060	329.34	19.76	L-12
			Blacksmith	day	0.500	352.86	176.43	L-02
			Mazdoor	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	379.91	37.99	P&M-053
			c) Material					
			Corrugated sheet,3 mm thick, "W" beam section railing,4.5 m in length	kg	41.210	60.000	2472.60	M-185 /1000
			Channel post 150 x 75 x 5 mm,1.8 m long,3 Nos @ 16.4 kg per metre	kg	88.560	60.000	5313.60	M-185 /1000
			Spacer 150 x 75 x 5 mm channel 0.33 m long,3 Nos @ 16.4 kg per metre	kg	16.240	60.000	974.40	M-185 /1000
			Nuts and bolts	kg	20.000	87.69	1753.71	M-136
			Add 25 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				2628.58	
			d) Overhead charges @ 8% on (a+b+c)				1082.40	
			e) Contractor's profit @ 10% on (a+b+c+d)				1461.24	
			Cost for 4.5 metre = a+b+c+d+e				16073.62	
			Rate per metre = (a+b+c+d+e)/4.5				3571.91	
						say	***3572.00***	
							3572.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.23		**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, 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 810					
			Unit = Running metre					
			Taking output = 4.5 metre length					
			a) Labour					
			Mate	day	0.060	329.34	19.76	L-12
			Blacksmith	day	0.500	352.86	176.43	L-02
			Mazdoor	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	379.91	37.99	P&M-053
			c) Material					
			Corrugated sheet,3 mm thick, "Thrie" beam section railing,4.5 m in length	kg	72.940	98.80	7206.53	M-095
			Channel post 150 x 75 x 5 mm, 2 m long,3 Nos @ 16.4 kg per metre	kg	98.400	60.000	5904.00	M-185 /1000
			Spacer 150 x 75 x 5 mm channel 0.546 m long,3 Nos	kg	26.860	60.000	1611.60	M-185 /1000
			Nuts and bolts	kg	30.000	87.69	2630.57	M-136
			Add 15 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				2602.91	
			d) Overhead charges @ 8% on (a+b+c)				1627.42	
			e) Contractor's profit @ 10% on (a+b+c+d)				2197.01	
			Cost for 4.5 metre = a+b+c+d+e				24167.12	
			Rate per metre= (a+b+c+d+e)/4.5				5370.47	
						say	***5370.00***	
							5370.00	
		Note	In the case of median crash barrier, 'W' metal beam or thrie beam section should be provided on both sides of the vertical posts fixed in the median. Extra provision for metal beam railing and spacer is required to be made when fixed in the median depending on approved design.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.27	**Suggestive**		**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 and fixed firmly in concrete foundation.					
			Unit = Each					
			Taking output = one light					
			a) Labour					
			Mate	day	0.030	329.34	9.88	L-12
			Mazdoor	day	0.500	152.91	76.45	L-13
			Electrician	day	0.250	352.86	88.22	L-02
			b) Material					
			i) Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	1.000	11762.00	11762.00	M-177
			ii) Sodium vapour lamp	each	1.000	11115.09	11115.09	M-174
			Add 5 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				1143.85	
			c) Painting					
			For Fixing in Median					
			Providing two coats of alluminium paint over steel circular hollow pipe with overhang on both sides	sqm	5.750	52.00	299.00	Item 8.9
			For fixing in Footpath					
			Providing two coats of alluminium paint over steel circular hollow pipe with overhang on one side	sqm	4.630	52.00	240.76	Item 8.9
		(i)	**For Fixing in Median**					
			d) Overhead charges @ 8% on (a+b)				1935.64	
			e) Contractor's profit @ 10% on (a+b+d)				2613.11	
			Rate per light for fixing in Median= a+b+c+d+e				29043.25	
						say	***29043.00***	
		(ii)	**For fixing in Footpath**					
			Rate per light for Fixing in Footpath = a+b+c+d+e				28985.01	
						say	***28985.00***	
							28985.00	
		Note	The items of excavation and cement concrete foundation will be measured and included separately in the estimate as per approved design and drawing. The rate for painting has been analysed in this chapter.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.29	**Suggestive**		**Cable Duct Across the Road**					
			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 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:98-1997, 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 - 1997 and approved drawings.					
8.29		**Case(ii)**	**Double row for two utility services**					
			Unit = Running metre					
			Taking output = 20metres					
			a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides.	cum	3.370	4391.00	14797.67	Item 12.7 (B)
			b) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			Mazdoor skilled	day	0.250	244.65	61.16	L-15
			c) Material					
			Reinforced Cement Concrete pipe 300 mm dia	metre	40.000	620.73	24829.11	M-156
			Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 40 m)	cum	14.400	978.88	14095.88	M-009
			Collar for joints 300 mm dia	each	18.000	691.61	12448.90	M-090
			Cement mortar 1:2 for joints	cum	0.040	7256.00	290.24	Item 12.6 (B)
			d) Machinery					
			Tractor-trolley	hour	1.000	379.91	379.91	P&M-053
			e) Overhead charges @ 8% on (b+c+d)				4194.20	
			f) Contractor's profit @ 10% on (b+c+d+e)				5662.17	
			Cost for 20 metre = a+b+c+d+e+f				77081.53	
			Rate per metre = (a+b+c+d+e+f)/20				3854.08	
						say	***3854.00***	
							3854.00	
		Note	1.Inspection chamber at both ends is the responsibility of the agency who is laying the duct. Hence not included.					
			2.The rates for stone masonry / brick masonry and cement mortar to be adopted from respective clauses.					
8.30	**Suggestive**		**Highway Patrolling and Traffic Aid Post**					
			It is proposed to locate one Traffic Aid Post every 50-60 km of the highway.					
			The organisation and financial aspect are required to be finalised in consultation with administrative and traffic authorities .					
8.31	**Suggestive**		**Items Related to Underpass/ Subway/ Overhead Bridge/ Overhead Foot Bridge**					
			The items involved for underpass/ subway/ overhead bridge/ overhead foot bridge are earthwork, plain cement concrete, plastering, painting, information sign etc. The rates for these items are available in respective chapters which can be adopted for the quantities derived from the approved designs and drawings					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.32	**Suggestive**		**Traffic Control System and Communication System**					
			Providing a traffic control centre and communication system including telecommunication facilities and related accessories, CCTV, radar, vehicle detection camera, central computer system					
			These are specialised item of telecommunication system and are the commercial products. The designer is required to contact the manufacturers to ascertain market prices. In case of civil works required to be executed for these installations, pricing may be done as per rates in relevant chapters for quantities derived as per approved design and drawing.					
			As regards the locations where such devices are required to be installed, the traffic control authority should be consulted to finalise the location					
8.33	**Suggestive**		**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 802.3					
		(i)	**Gantry Support System**					
			Unit = tonne					
			Taking output=1 tonne					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			Blacksmith	day	1.000	352.86	352.86	L-02
			b) Material					
			Alluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	96330.78	101147.32	M-060
			Add 15 per cent of cost of material for fabrication and erection.				15172.10	
			Add 1 per cent of cost of material for nuts, bolts and welding				1011.47	
			c) Machinery					
			Truck 10 tonne	hour	1.000	517.53	517.53	P&M-057
			d) Overhead charges @ 8% on (a+b+c)				9483.73	
			e) Contractor's profit @ 10% on (a+b+c+d)				12803.03	
			Rate per tonne = a+b+c+d+e				140833.37	
						say	***140833.00***	
							140833.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.33		**(ii)**	**Message Display**					
			Message display board 6 sqm electronically operated with complete electronic fitments for flashing the pre-determined messages.					
			This is a specilised commercial product and the lumpsum rate including erection at site is required to be as certained from the market and including in the rate analysis. The size of the board will vary depending upon specific location.					
			The rate for the gantry mounted variable sign would be the addition of cost of gantry support system as per approved design determined at (i) above and the cost of message display board as certained from the market at (ii) above					
8.34	**Suggestive**		**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.					
			Unit = sqm					
			Taking output = 20sqm					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	1.500	152.91	229.36	L-13
			Blacksmith	day	0.250	352.86	88.22	L-02
			b) Material					
			Scrap tyres of size 900 x 20	each	80.000	49.40	3952.03	M-166
			20 mm steel wire rope	kg	150.000	155.26	23288.76	M-182
			Add 1 per cent of cost of wire rope for clamps etc.				232.89	
			c) Machinery					
			Tractor-trolley	hour	3.000	379.91	1139.74	P&M-053
			d) Overhead charges @ 8% on (a+b+c)				2316.59	
			e) Contractor's profit @ 10% on (a+b+c+d)				3127.39	
			Cost for 20 sqm = a+b+c+d+e				34401.32	
			Rate per sqm = (a+b+c+d+e)/20				1720.07	
						say	***1720.00***	
							1720.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.34		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					
			Unit = sqm					
			Taking output = 20sqm					
			a) Labour					
			Mate	day	0.130	329.34	42.81	L-12
			Mazdoor	day	3.000	152.91	458.72	L-13
			Blacksmith	day	0.250	352.86	88.22	L-02
			b) Material					
			Plastic barrels	each	50.000			
			or					
			Steel barrels	each	50.000	72.92	3646.22	M-178
			Sand	cum	8.000	1176.20	9409.60	M-004
			20 mm steel wire rope	kg	15.000	155.26	2328.88	M-182
			Add 1 per cent of cost of wire rope for clamps etc.				23.29	
			c) Machinery					
			Tractor-trolley	hour	2.000	379.91	759.83	P&M-053
			d) Overhead charges @ 8% on (a+b+c)				1340.60	
			e) Contractor's profit @ 10% on (a+b+c+d)				1809.82	
			Cost for 20 sqm = a+b+c+d+e				19907.98	
			Rate per sqm = (a+b+c+d+e)/20				995.40	
						say	***995.00***	
							995.00	
8.34		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)					
			Providing and installing a patentend HI - DRO cell system as a traffic impact attenuators, using plastic tubes 50 cm dia, 1.2 m in height, 25 mm opening at the top, placed in three rows, filled with water and tied with a 20 mm steel wire rope					
			Unit = sqm					
			Taking output = 10sqm					
			a) Labour					
			Mate	day	0.100	329.34	32.93	L-12
			Mazdoor	day	2.500	152.91	382.27	L-13
			b) Material					
			Plastic tubes 50 cm dia,1.2 m high	each	40.000	92.63	3705.03	M-145
			Cost of water	KL	12.000	55.58	666.91	M-195
			20 mm steel wire rope	kg	100.000	155.26	15525.84	M-182
			Add 1 per cent of cost of wire rope for clamps etc.				155.26	
			c) Machinery					
			Tractor-trolley	hour	2.000	379.91	759.83	P&M-053
			Water tanker6 KL capacity	hour	2.000	517.53	1035.06	P&M-060
			d) Overhead charges @ 8% on (a+b+c)				1781.05	
			e) Contractor's profit @ 10% on (a+b+c+d)				2404.42	
			Cost for 10 sqm = a+b+c+d+e				26448.58	
			Rate per sqm = (a+b+c+d+e)/10				2644.86	
						say	***2645.00***	
							2645.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.35	**Suggestive**		**Road Markers/Road Stud with Lense Reflector**					
			Providing and fixing of road stud 100x 100 mm, die-cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973					
			Unit = Nos					
			Taking output = 50Nos					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor	day	1.000	152.91	152.91	L-13
			b) Material					
			Aluminium studs 100 x 100 mm fitted with lense reflectors	each	50.000	515.18	25758.78	M-062
			Add 10 per cent of cost of material for fixing and installation				2575.88	
			c) Overhead charges @ 8% on (a+b)				2280.06	
			d) Contractor's profit @ 10% on (a+b+c)				3078.08	
			Cost for 50 studs = a+b+c+d				33858.88	
			Rate per studs = (a+b+c+d)/50				677.18	
						say	***677.00***	
							677.00	
8.36	**Suggestive**		**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					
			Unit = Running metre					
			Taking output = 68 Nos.					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor	day	0.500	152.91	76.45	L-13
			b) Material					
			Traffic cones with 150 mm reflective sleeve	each	68.000	1852.52	125971.02	M-192
			c) Machinery					
			Tractor-trolley	hour	0.100	379.91	37.99	P&M-053
			d) Overhead charges @ 8% on (a+b+c)				10087.36	
			e) Contractor's profit @ 10% on (a+b+c+d)				13617.94	
			Cost for 68 Nos. = a+b+c+d+e				149797.36	
			Rate per metre = (a+b+c+d+e)/68				2202.90	
						say	***2203.00***	
							2203.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.37	**Suggestive**		**Roadside Amenities**					
		A	**Rest areas**					
			Providing plainly furnished accommodation for rest rooms, dormitories, restaurants, stalls, shops, petrol pump, telephone booth, first aid room, traffic aid post, police assistance booth, including electricity, toilet and sewerage system					
			Pricing may be done based on current plinth area rates approved by PWD/CPWD/MES for a particular zone. Area is required to be assessed for specific location as per actual site conditions					
		B	**Parking areas and bus laybyes for trucks, buses and light vehicles**					
			Pricing of parking areas may be done for the quantities of various items based on the approved dimensions and pavement design for a particular terrain and soil. Rates for items may be from respective chapters.					
		C	**Lawn**					
			Providing a lawn planted with grass and its maintenance					
			Pricing of lawn may be done as per rates given in the chapter on horticulture for the quantities as per approved dimensions in the drawings					
8.38	**Suggestive**		**Rumble Strips**					
			Provision of 15 nos rumble 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 paint.					
			Unit = sqm					
			Taking output = 100 sqm (including gaps)					
			The rate per sqm of premix carpet and road marking may be adopted from chapter 5 & 8 respectively for the quantities calculated from approved drawings					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.39	**Suggestive**		**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					
			Unit = each					
			Taking output = one number					
			Earthwork	cum				
			Cement Concrete	cum				
			brick masonry or	cum				
			stone masonry	cum				
			Painting	sqm	2.500			
			a) Labour					
			Mate	day	0.090			
			Mazdoor	day	1.000			
			Blacksmith	day	1.000			
			Welder	day	0.250			
			b) Material					
			Steel pipe 100 mm dia	metre	3.500			
			Steel pipe 25 mm dia	metre	10.000			
			CGI sheets	kg	8.000			
			Add 25 per cent of cost of material for fabrication					
			Add 2 per cent of cost of material for welding consumables, J-hooks, washers etc.					
			c) Machinery					
			Tractor-trolley	hour	0.500			
			d) Overheads @ per cent on (a+b+c)					
			e) Contractors Profit@ per cent on (a+b+c+d)					
			Rate per policeman umbrella = a+b+c+d+e					
8.40	**suggestive**		**High Mast Pole Lighting at Interchanges and Flyovers**					
			Providing and erecting a high mast pole lighting with 30 m high hot dip galvanised mast designed to withstand forces exerted with wind speeds of 180 km per hour with 3 seconds gust, as per IS:875 (Part 3) - 1978, fitted with a base flange, door at the base of mast with heavy duty internal lock, lantern carriage, suitable winching arrangement for safe working load of 750 kg and high powered electrically driven power tools for raising and lowering of lantern carriage, flexible 8 core electric cable, lightening conductor, earthing terminal, and fixing 2 nos aviation obstruction lights on top of the mast, all complete as per approved design and drawings					
			This is a specialised work and is generally done by firms who specialise in such jobs. The detailed designs and estimates are submitted by the firms along with their tender for checks by the Department. The cost of this work is required to be worked out based on approved design, drawings and estimate of the lowest tender. A separate contract for this work is concluded as the contractors for road and bridge works generally donot undertake such jobs.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.41			**Toll Plaza**					
			The construction, operation and maintenance of Toll Plaza can be broken into separate items of work as under based on the approved design and drawings:-					
			a) Provision of toll collection service lane to separate different categories of vehicles for purpose of toll collection. This involves considerable increase in carriage way width					
			b) Provision of 2.5 m wide separators for different toll collection service lanes for safety					
			c) Toll booths with integrated roof cover					
			d) Barrier gates for individual lanes					
			e) Provision of building to provide facility to toll plaza personnel					
			f) Toll plaza office equipment and furniture					
			g) Water supply, electricity, sanitation, septic-tank system and drainage					
			h) Telephone, intercomes, wireless communication system					
			i) High mast lighting					
			j) Pavement marking					
			k) Overhead signs					
			l) Fixed message signs (Advance)					
			m) Variable message signs					
			n) Traffic cones and pylons					
			o) First aid post					
			p) Traffic aid post and security					
			The quantities for the above mentioned items may be calculated from the approved design and drawings and their rates adopted from respective chapters of the Standard Data Book					
8.42			**Safety Devices and Signs in Construction Zones**					
			Provision and fixing of traffic signs for limited period at suitable locations in construction zone comprising of warning zone, approach transition zone, working zone and terminal transition zone with a minimum distance of 60 cm from the edge of the kerb in case of kerbed roads and 2 to 3 m from the edge of the carriageway in case of un-kerbed roads, the bottom edge of the lowest sign plate to be not less than 2 m above the road level, fixed on 60 mm x 60 mm x 6 mm angle iron post, founded and installed as per approved design and drawings, removed and disposed of after completion of construction work, all as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one sign post					
			Following types of signs are required to be fixed in construction zones for safety of traffic					
			a) Diversion one km ahead					
			b) Traffic sign ahead					
			c) Road ahead closed					
			d) Men at work					
			e) Road narrow					
			f) Single file traffic					
			g) Right lane diverted					
			h) Left lane diverted					
			i) Right lane closed					
			j) Left lane closed					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			k) Median closed					
			l) Diversion to other carriageway					
			m) Traffic signal ahead					
			n) Two way traffic					
			o) Un - even road					
			p) Slippery road					
			q) Loose chippings					
			r) Dual carriageway ends					
			s) Diversion					
			t) Do not enter					
			u) Road closed					
			v) Stop					
			w) Slow					
			x) One way					
			y) Give way					
			z) Overtaking prohibited					
			aa) Speed limit					
			bb) Weight limit					
			cc) Height and length limit					
			dd) No stopping or standing					
			ee) Any other warning or regulatory safety sign as per site requirement and consistent with IRC:SP:55-2001 and IRC:67					
			The rate for traffic signs are already worked out and given elsewhere in this chapter. The same may be adopted.					
8.43	**suggestive**		**Portable Barricade in Construction Zone**					
			Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 45^0 C, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one steel portable barricade					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Mazdoor	day	0.250	152.91	38.23	L-13
			Painter	day	0.500	352.86	176.43	L-18
			Welder	day	0.250	352.86	88.22	L-02
			b) Material					
			Angle iron 45 x 45 x 5 mm	kg	25.000	60.000	1500.00	M-185 /1000
			MS sheet 300 mm wide,2.5 m long and 2.6 mm thick	kg	15.000	60.000	900.00	M-185 /1000
			Paint	litre	0.500	185.25	92.63	M-137
			Add 2 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				48.00	
			c) Overhead charges @ 8% on (a+b)				228.01	
			d) Contractor's profit @ 10% on (a+b+c)				307.81	
			Rate per barricade = a+b+c+d				3385.90	
						say	***3386.00***	
							3386.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.44	**suggestive**		**Permanent Type Barricade in Construction Zone**					
		A	**With steel components**					
			Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of 45^0 C, complete as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mazdoor	day	0.300	152.91	45.87	L-13
			Painter	day	0.600	352.86	211.72	L-18
			Welder	day	0.300	352.86	105.86	L-02
			b) Material					
			Angle iron 50 x 50 x 5 mm,2 m long,2 Nos.	kg	15.000	60.000	900.00	M-185 /1000
			MS sheet of 12 SWG,3 Nos of 200 mm width and 4 m length	kg	50.000	60.000	3000.00	M-185 /1000
			Paint	litre	1.000	185.25	185.25	M-137
			Add 1 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				39.00	
			c) Overhead charges @ 8% on (a+b)				360.33	
			d) Contractor's profit @ 10% on (a+b+c)				486.45	
			Rate per barricade = a+b+c+d				5350.95	
						say	***5351.00***	
							5351.00	
8.44		**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 strips, 150 mm in width at an angle of 45^0 C, complete as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mazdoor	day	0.300	152.91	45.87	L-13
			Painter	day	0.600	352.86	211.72	L-18
			Carpenter	day	0.600	352.86	211.72	L-04
			b) Material					
			Timber	cum	0.180	31346.67	5642.40	M-191
			Add 1 per cent of cost of timber for nuts & bolts, nails, etc.				56.42	
			c) Overhead charges @ 8% on (a+b)				494.77	
			d) Contractor's profit @ 10% on (a+b+c)				667.94	
			Rate per barricade = a+b+c+d				7347.30	
						say	***7347.00***	
							7347.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
8.44		**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					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.240	329.34	79.04	L-12
			Mazdoor	day	3.000	152.91	458.72	L-13
			Painter	day	1.000	352.86	352.86	L-18
			Mason	day	2.000	352.86	705.72	L-11
			b) Material					
			Brick	each	1800.000	8.23	14820.12	M-084
			Cement	kg	22.000	8.939	196.66	M-086 /1000
			Sand	cum	0.090	1176.20	105.86	M-005
			Paint	litre	1.250	185.25	231.56	M-137
			c) Overhead charges @ 8% on (a+b)				1356.04	
			d) Contractor's profit @ 10% on (a+b+c)				1830.66	
			Rate per barricade = a+b+c+d				20137.24	
						say	***20137.00***	
							20137.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
	Non-Sch		**Utility Duct**					
			Unit = Running metre					
			Taking output = 20metres					
			b) Labour					
			Mate	day	0.050	0.00	0.00	L-12
			Mazdoor	day	1.000	0.00	0.00	L-13
			Mazdoor skilled	day	0.250	0.00	0.00	L-15
			c) Material					
			HDPE pipe 90 mm dia	metre	60.000	231.00	13860.00	M-156
			Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 20 m)	cum		0.00	0.00	M-009
			Collar for joints 300 mm dia	each	0.000	0.00	0.00	M-090
			Cement mortar 1:2 for joints	cum	0.000	7256.00	0.00	Item 12.6 (B)
			d) Machinery					
			Tractor-trolley	hour	0.500	379.91	189.96	P&M-053
			e) Overhead charges @ 8% on (b+c+d)				1124.00	
			f) Contractor's profit @ 10% on (b+c+d+e)				1517.40	
			Cost for 20 metre = a+b+c+d+e+f				16691.35	
			Rate per metre = (a+b+c+d+e+f)/20				834.57	
						say	***835.00***	
							835.00	

CHAPTER-9
PIPE CULVERTS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
9.1	408		**PCC 1:3:6 in Foundation**					
			Plain cement concrete 1:3:6 mix with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.					
			Unit = cum					
			Taking output = 15 cum					
			a) Labour					
			Mate	day	0.640	329.34	210.78	L-12
			Mason	day	1.000	352.86	352.86	L-11
			Mazdoor	day	15.000	152.91	2293.59	L-13
			b) Material					
			40mm Aggregate at site	cum	13.800	1411.44	19477.87	M-055
			Sand at site	cum	6.900	1176.20	8115.78	M-005
			Cement at site	tonne	3.300	8939.12	29499.10	M-086
			Cost of water	KL	18.000	55.58	1000.36	M-195
			c) Machinery					
			Concrete mixer0.4/ 0.28 cum	hour	6.000	237.59	1425.55	P&M-009
			Generator set 33 KVA	hour	6.000	365.80	2194.79	P&M-079
			Water tanker6 KL capacity	hour	3.000	517.53	1552.58	P&M-060
			d) Overhead charges @ 8% on (a+b+c)				5289.86	
			e) Contractor's profit @ 10% on (a+b+c+d)				7141.31	
			Cost for 15 cum = a+b+c+d+e				78554.43	
			Rate per cum = (a+b+c+d+e)/15				5236.96	
						say	***5237.00***	
							5237.00	
		Note	Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
9.2	**2900**		**Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Single Row .**					
			Laying Reinforced cement concrete pipe NP4/prestressed 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 .					
			Unit = metre					
			Taking output = 12.5 metres (5 pipes of 2.5 m length each)					
		A	**1000 mm dia**					
			a) Labour					
			Mate	day	0.180	329.34	59.28	L-12
			Mason	day	0.500	352.86	176.43	L-11
			Mazdoor	day	4.000	152.91	611.62	L-13
			b) Material					
			Sand at site	cum	0.070	1176.20	82.33	M-005
			Cement at site	tonne	0.050	8939.12	446.96	M-086
			RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	12.500	6275.03	78437.84	M-154
			Granular material passing 5.6 mm sieve for bedding	cum	4.500	978.88	4404.96	M-009
			c) Overhead charges @ 8% on (a+b)				6737.55	
			d) Contractor's profit @ 10% on (a+b+c)				9095.70	
			Cost for 12.5 metres = a+b+c+d				100052.68	
			Rate per metre = (a+b+c+d)/12.5				8004.21	
						say	***8004.00***	
							8004.00	
		Note	1. In case of cement craddle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .					
			2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
9.2		**B**	**1200 mm dia**					
			a) Labour					
			Mate	day	0.280	329.34	92.21	L-12
			Mason	day	1.000	352.86	352.86	L-11
			Mazdoor	day	6.000	152.91	917.44	L-13
			b) Material					
			Sand at site	cum	0.090	1176.20	105.86	M-005
			Cement at site	tonne	0.070	8939.12	625.74	M-086
			RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	12.500	10374.08	129676.05	M-155
			Granular material passing 5-6 mm sieve for class bedding	cum	5.000	978.88	4894.40	M-009
			c) Overhead charges @ 8% on (a+b)				10933.16	
			d) Contractor's profit @ 10% on (a+b+c)				14759.77	
			Cost for 12.5 metres = a+b+c+d				162357.50	
			Rate per metre= (a+b+c+d)/12.5				12988.60	
						say	***12989.00***	
							12989.00	
		Note	1. In case of cement craddle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .					
			2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections					
9.3	**2900**		**Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Double Row .**					
			Laying Reinforced cement concrete pipe NP4 / prestressed 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 .					
			Unit = metre					
			Taking output = 12.5 metres (10 pipes of 2.5 m length each in two rows.)					
		A	**1000 mm dia**					
			a) Labour					
			Mate	day	0.360	329.34	118.56	L-12
			Mason	day	1.000	352.86	352.86	L-11
			Mazdoor	day	8.000	152.91	1223.25	L-13

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Material					
			Sand at site	cum	0.140	1176.20	164.67	M-005
			Cement at site	tonne	0.100	8939.12	893.91	M-086
			RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	25.000	6275.03	156875.68	M-154
			Granular material passing 5.6 mm sieve for bedding	cum	12.500	978.88	12236.01	M-009
			c) Overhead charges @ 8% on (a+b)				13749.19	
			d) Contractor's profit @ 10% on (a+b+c)				18561.41	
			Cost for 12.5 metres = a+b+c+d				204175.54	
			Rate per metre = (a+b+c+d)/12.5				16334.04	
		Note	1. In case of cement craddle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .			***say***	***16334.00***	
							16334.00	
			2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections					
9.3		**B**	**1200 mm dia**					
			a) Labour					
			Mate	day	0.560	329.34	184.43	L-12
			Mason	day	2.000	352.86	705.72	L-11
			Mazdoor	day	12.000	152.91	1834.87	L-13
			b) Material					
			Sand at site	cum	0.180	1176.20	211.72	M-005
			Cement at site	tonne	0.140	8939.12	1251.48	M-086
			RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	25.000	10374.08	259352.10	M-155
			Granular material passing 5-6 mm sieve for class bedding	cum	13.750	978.88	13459.61	M-009
			c) Overhead charges @ 8% on (a+b)				22159.99	
			d) Contractor's profit @ 10% on (a+b+c)				29915.99	
			Cost for 12.5 metres = a+b+c+d				329075.91	
			Rate per metre= (a+b+c+d)/12.5				26326.07	
		Note	1. In case of cement craddle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .			***say***	***26326.00***	
							26326.00	
			2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections					

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CHAPTER- 10
MAINTENANCE OF ROADS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
10.1	**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					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.080	329.34	26.35	L-12
			Mazdoor	day	2.000	152.91	305.81	L-13
			b) Machinery					
			Excavator1.0 cum bucket capacity @ 60 cum per hour	hour	0.130	1621.98	210.86	P&M-026
			Tipper (L is average lead in km for borrow earth)	tonne.km	12 x L	4.12	148.20	Lead =3 km & P&M-058
			Add 10 per cent of cost of carriage towards loading and unloading charges.				14.82	
			Plate compactor	hour	0.500	256.41	128.21	P&M-086
			c) Overhead charges @ 8% on (a+b)				66.74	
			d) Contractor's profit @ 10% on (a+b+c)				90.10	
			Cost for 10 cum = a+b+c+d				991.08	
			Rate per cum = (a+b+c+d)/10				99.11	
						say	***99.00***	
		Note	Only 75 per cent of fresh material has been provided as 25 per cent can be retrieved at site from earth that is flown down the slope in the form of slurry and deposited at the foot of the rain cuts					
10.3	**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					
			Unit = sqm					
			Taking output = 100 sqm					
			Assuming average depth of stripping as 75 mm					
			Quantity of earth cutting involved = 7.5 cum					
			a) Labour					
			Mate	day	0.100	329.34	32.93	L-12
			Mazdoor	day	2.500	152.91	382.27	L-13
			b) Machinery					
			Plate compactor @ 25 sqm per hour	hour	4.000	256.41	1025.65	P&M-086
			c) Overhead charges @ 8% on (a+b)				115.27	
			d) Contractor's profit @ 10% on (a+b+c)				155.61	
			Cost for 100 sqm = a+b+c+d				1711.72	
			Rate per sqm on = (a+b+c+d)100				17.12	
						say	***17.00***	
		Note	The earth stripped from earthen shoulders to be dumped on the side slopes locally for disposal.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
10.4	**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 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2					
			Unit = Sqm					
			Taking out put = 10250 sqm (205 cum)(405 tonne)					
			a) Labour					
			Mate	Day	3.760	329.34	1238.30	L-12
			Mazdoor	Day	90.000	152.91	13761.54	L-13
			Mazdoor skilled	Day	4.000	244.65	978.60	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	6.000	334.04	2004.24	P&M-001
			HMP 100-110 TPH Capacity	hour	6.000	19495.52	116973.09	P&M-022
			Tipper 10 tonnes capacity	hour	45.000	491.65	22124.32	P&M-048
			Smooth wheeled roller 8-10 tonnes	hour	12.000	676.32	8115.78	P&M-044
			c) Material					
			Crushed stone aggregates nominal size 13.2mm @ 0.18 cum per 10 sqm	cum	184.500	1587.87	292962.02	M-052
			Crushed stone aggregates nominal size 11.2mm @ 0.09 cum/10 sqm	cum	92.250	1529.06	141055.79	M-051
			Bitumen 80/100 @ 14.6 kg per 10 sqm	tonne	14.970	40000.00	598800.00	M-074
			Bitumen emulsion for tack coat including vertical sides of pot hole.	tonne	2.460	33000.00	81180.00	M-076
			d) Overhead charges @ 8% on (a+b+c)				102335.49	
			e) Contractor's profit @ 10% on (a+b+c+d)				138152.92	
			Cost for 10250 sqm = a+b+c+d+e				1519682.09	
			Rate per sqm = (a+b+c+d+e)/10250				148.26	
						say	***148.00***	
							149.00	

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CHAPTER-11
HORTICULTURE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.1	**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)					
			Unit = cum					
			Taking output = 15 cum					
			a) Labour					
			Mate	day	0.040	329.34	13.17	L-12
			Mazdoor	day	1.000	152.91	152.91	L-13
			b) Overhead charges @ 8% on (a)				13.29	
			c) Contractor's profit @ 10% on (a+b)				17.94	
			Cost for 15 cum= a+b+c				197.30	
			Rate per cum = (a+b+c)/15				13.15	
						say	***13.20***	
11.2	**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					
			Unit = sqm					
			Taking output = 100 sqm					
		(i)	**In rows 15 cm apart in either direction**					
			a) Labour					
			Mate	day	0.170	329.34	55.99	L-12
			Mazdoor for grassing	day	0.750	152.91	114.68	L-13
			Mazdoor for maintenance for 30 days	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	517.53	258.76	P&M-060
			c) Material					
			Doob grass	kg	100.000	27.17	2717.02	M-118
			d) Overhead charges @ 8% on (a+b+c)				263.95	
			e) Contractor's profit @ 10% on (a+b+c+d)				356.33	
			Cost for 100 sqm = a+b+c+d+e				3919.64	
			Rate per sqm= (a+b+c+d+e)/100				39.20	
						say	***39.20***	
11.2		**(ii)**	**In rows 7.5 cm apart in either direction**					
			a) Labour					
			Mate	day	0.220	329.34	72.45	L-12
			Mazdoor for grassing.	day	1.250	152.91	191.13	L-13
			for maintenance for 30 days	day	1.000	152.91	152.91	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.750	517.53	388.15	P&M-060
			c) Material					
			Doob grass	kg	200.000	27.17	5434.04	M-118
			d) Overhead charges @ 8% on (a+b+c)				499.09	
			e) Contractor's profit @ 10% on (a+b+c+d)				673.78	
			Cost for 100 sqm = a+b+c+d+e				7411.55	
			Rate per sqm = (a+b+c+d+e)/100				74.12	
						say	***74.10***	
		Note	In the case of horticulture one mate has been provided for every 10 mazdoors as maintenance of grass and plants require more care.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.3	**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					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.150	329.34	49.40	L-12
			Mazdoor for preparation of ground	day	0.500	152.91	76.45	L-13
			Mali for fetching doobs grass roots and grassing at 15 cm apart	day	1.000	235.24	235.24	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	517.53	258.76	P&M-060
			Tractor with filler	hour	0.010	379.91	3.80	P&M-053
			c) Material					
			Supply of farm yard manure at site of work	cum	0.180	98.80	17.78	M-172
			Fine grass	kg	100.000	37.05	3705.03	M-119
			d) Overhead charges @ 8% on (a+b+c)				347.72	
			e) Contractor's profit @ 10% on (a+b+c+d)				469.42	
			Cost for 100 sqm = a+b+c+d+e				5163.61	
			Rate per sqm = (a+b+c+d+e)/100				51.64	
						say	***51.60***	
11.4	**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					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mali	day	10.000	235.24	2352.40	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	15.000	517.53	7762.92	P&M-060
			c) Material					
			Cost of water	KL	90.000	55.58	5001.79	M-195
			d) Overhead charges @ 8% on (a+b+c)				1209.37	
			e) Contractor's profit @ 10% on (a+b+c+d)				1632.65	
			Cost for 100 sqm = a+b+c+d+e				17959.13	
			Rate per sqm = (a+b+c+d+e)/100				179.59	
						say	***180.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.5	307		**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 of 0.6 cum per 100 sqm					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.250	329.34	82.33	L-12
			Mazdoor for preparation of ground	day	1.000	152.91	152.91	L-13
			Mali for fetching doobs grass roots hedges and grassing at 10 cm apart	day	1.500	235.24	352.86	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	517.53	258.76	P&M-060
			Tractor with tiller	hour	0.010	379.91	3.80	P&M-053
			c) Material					
			Supply of farm yard manure at site of work @ 0.6 cum per 100 sqm	cum	0.600	98.80	59.28	M-172
			Fine grass	kg	100.000	37.05	3705.03	M-119
			d) Overhead charges @ 8% on (a+b+c)				369.20	
			e) Contractor's profit @ 10% on (a+b+c+d)				498.42	
			Cost for 100 sqm = a+b+c+d+e				5482.59	
			Rate per sqm = (a+b+c+d+e)/100				54.83	
						say	***54.80***	
11.6	307		**Maintenance of Lawns with Fine Grassing for the First Year**					
			Maintenance of lawns with fine grassing for the first year including watering etc					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mali	day	10.000	235.24	2352.40	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	20.000	517.53	10350.56	P&M-060
			c) Material					
			Cost of water	KL	60.000	55.58	3334.53	M-195
			d) Overhead charges @ 8% on (a+b+c)				1283.00	
			e) Contractor's profit @ 10% on (a+b+c+d)				1732.05	
			Cost for 100 sqm = a+b+c+d+e				19052.53	
			Rate per sqm = (a+b+c+d+e)/100				190.53	
						say	***191.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.7	307		**Planting and Maintaining of Permanent Hedges**					
		(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					
			Unit = Running metre					
			Taking output = 100metre					
			a) Labour					
			Mate	day	1.400	329.34	461.07	L-12
			Mazdoor for digging of trench 60 cm wide and 45 cm deep	day	10.000	152.91	1529.06	L-13
			Mazdoor for refilling the excavated earth mixed with cow dung, preparation of ground and digging of plant, from the nursery carriage to site and planting in position	day	4.000	152.91	611.62	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	517.53	258.76	P&M-060
			c) Material					
			Cost of hedge plants 2 rows at 30 cm apart	each	2x340	14.82	10077.68	M-122
			Supply of farm yard manure at site of work	cum	4.670	98.80	461.40	M-172
			Pesticide	kg	0.250	395.20	98.80	M-142
			Cost of water	KL	3.000	55.58	166.73	M-195
			d) Overhead charges @ 8% on (a+b+c)				1093.21	
			e) Contractor's profit @ 10% on (a+b+c+d)				1475.83	
			Cost for 100 metres = a+b+c+d+e				16234.17	
			Rate per metre = a+b+c+d+e)/100				162.34	
						say	***162.00***	
		(b)	**Maintenance of hedge for one year**					
			Unit = Running metre					
			Taking output = 100 m					
			a) Labour					
			Mate	day	3.000	329.34	988.01	L-12
			Mazdoor	day	30.000	152.91	4587.18	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	5.000	517.53	2587.64	P&M-060
			c) Material					
			Manure sludge/Farm yard manure	cum	2.000	98.80	197.60	M-172
			Pesticide	kg	0.500	395.20	197.60	M-142
			Cost of water	KL	30.000	55.58	1667.26	M-195
			Cost of hedge plants @ 10 per cent casualty	each	68.000	14.82	1007.77	M-122
			d) Overhead charges @ 8% on (a+b+c)				898.65	
			e) Contractor's profit @ 10% on (a+b+c+d)				1213.17	
			Cost for 100 metres = a+b+c+d+e				13344.88	
			Rate per metre = a+b+c+d+e)/100				133.45	
						say	***133.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.8	307		**Planting and Maintaining of Flowering Plants and Shrubs**					
		(a)	**Planting flowering plants and shrubs in central verge**					
			Unit = Running metres 200 plants and 800 shrubs in two rows in one km length of road where width of verge is 3m and above.					
			Taking output = 1000 metres					
			a) Labour					
			Mate	day	1.200	329.34	395.20	L-12
			Mazdoor	day	12.000	152.91	1834.87	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	6.000	517.53	3105.17	P&M-060
			c) Material					
			Plants	each	200.000	67.93	13585.11	M-106
			Shrubs	each	800.000	24.70	19760.16	M-171
			Manure sludge/Farm yard manure	cum	63.640	98.80	6287.68	M-172
			Pesticide	kg	0.500	395.20	197.60	M-142
			Cost of water	KL	36.000	55.58	2000.72	M-195
			d) Overhead charges @ 8% on (a+b+c)				3773.32	
			e) Contractor's profit @ 10% on (a+b+c+d)				5093.98	
			Rate per Km = (a+b+c+d+e)				56033.82	
						say	***56034.00***	
							56036.00	
11.8		(b)	**Maintenance of flowering plants and shrubs in central verge for one year**					
			Unit = km					
			Taking output = one km					
			a) Labour					
			Mate	day	36.000	329.34	11856.10	L-12
			Mazdoor	day	365.000	152.91	55810.69	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	90.000	517.53	46577.52	P&M-060
			c) Material					
			Manure Sludge / farm yard manure at site	cum	10.000	98.80	988.01	M-172
			Cost of water	KL	180.000	55.58	10003.58	M-195
			Replacement of casualties @ 10 per cent					
			Plants	each	20.000	67.93	1358.51	M-106
			Shrubs	each	80.000	24.70	1976.02	M-171
			Pesticides	kg	1.500	395.20	592.80	M-142
			d) Overhead charges @ 8% on (a+b+c)				10333.06	
			e) Contractor's profit @ 10% on (a+b+c+d)				13949.63	
			Rate per Km for one year = (a+b+c+d+e)				153445.91	
						say	***153446.00***	
							153452.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.9	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 manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year					
			Unit = Each					
			Taking output = 10 trees					
			a) Labour					
			Mate	day	1.700	329.34	559.87	L-12
			Mazdoor for planting	day	2.000	152.91	305.81	L-13
			Mazdoor for maintenance for one year	day	15.000	152.91	2293.59	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	2.000	517.53	1035.06	P&M-060
			c) Material					
			Sapling 2 m high 25 mm dia	each	10.000	111.15	1111.51	M-165
			Farm yard manure	cum	0.940	98.80	92.87	M-172
			Pesticide	kg	0.500	395.20	197.60	M-142
			Cost of water	KL	12.000	55.58	666.91	M-195
			d) Overhead charges @ 8% on (a+b+c)				501.06	
			e) Contractor's profit @ 10% on (a+b+c+d)				676.43	
			Cost for 10 trees = a+b+c+d+e				7440.70	
			Rate per trees = (a+b+c+d+e)/10				744.07	
						say	***744.00***	
							744.00	
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					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.120	329.34	39.52	L-12
			Mazdoor	day	3.000	152.91	458.72	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	517.53	258.76	P&M-060
			c) Material					
			Cost of water	KL	3.000	55.58	166.73	M-195
			d) Overhead charges @ 8% on (a+b+c)				73.90	
			e) Contractor's profit @ 10% on (a+b+c+d)				99.76	
			Cost for 100 sqm = a+b+c+d+e				1097.39	
			Rate per sqm = (a+b+c+d+e) / 100				10.97	
						say	***11.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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					
			Unit = cum					
			Taking output = one cum					
			a) Material					
			a) Cost of well decayed farm yard manure duly screened, loading, carriage, unloading and stacking at site	cum	1.000	98.80	98.80	M-172
			b) Overhead charges @ 8% on (a)				7.90	
			c) Contractor's profit @ 10% on (a+b)				10.67	
			Rate per cum = (a+b+c)				117.38	
							117.00	
11.14		New	**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					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Mason	day	0.250	352.86	88.22	L-11
			Mazdoor	day	0.250	152.91	38.23	L-13
			b) Material					
			Brick 2nd class including carriage	each	230.000	8.23	1893.68	M-084
			Cement mortar 1:6	cum	0.025	4298.00	107.45	Item 12.6 (D)
			c) Overhead charges @ 8% on (a+b)				171.52	
			d) Contractor's profit @ 10% on (a+b+c)				231.56	
			Rate per tree Guard = a+b+c+d				2547.12	
						say	***2547.00***	
							2566.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.15		**New**	**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					
			Unit = Metre					
			Taking output= 10 metres					
			a) Labour					
			Mate	day	0.002	329.34	0.66	L-12
			Mason	day	0.050	352.86	17.64	L-11
			Mazdoor	day	0.050	152.91	7.65	L-13
			b) Material					
			Brick 2nd class including carriage	each	50.000	8.23	411.67	M-084
			c) Overhead charges @ 8% on (a+b)				35.01	
			d) Contractor's profit @ 10% on (a+b+c)				47.26	
			Cost for 10 metre = a+b+c+d				519.89	
			Rate per metre = (a+b+c+d)/10				51.99	
						say	***52.00***	
							18.80	
11.16		**New**	**Making Tree Guard 53 cm dia and 1.3 m High as per Design from Empty Bitumen Drums**					
			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					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.020	329.34	6.59	L-12
			Blacksmith	day	0.150	352.86	52.93	L-02
			Mazdoor	day	0.070	152.91	10.70	L-13
			b) Material					
			Empty bitumen drum	each	1.000	72.92	72.92	M-178
			MS sheet 50 x 0.5 mm	kg	0.650	60.00	39.00	M-185 /1000
			Rivets 6 mm dia and 10 mm in length	each	22.000	4.94	108.68	M-163
			c) Overhead charges @ 8% on (a+b)				23.27	
			d) Contractor's profit @ 10% on (a+b+c)				31.41	
			Rate for each tree guard = a+b+c+d				345.50	
						say	***345.00***	
							347.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.17		**New**	**Making Tree Guard 53 cm dia and 2 Metre 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					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate		0.040	329.34	13.17	L-12
			Blacksmith	day	0.200	352.86	70.57	L-02
			Mazdoor		0.200	152.91	30.58	L-13
			b) Material					
			Empty bitumen drum	each	1.500	72.92	109.39	M-178
			MS sheet50 x 0.5 mm	kg	0.650	60.00	39.00	M-185 /1000
			Rivets 6 mm dia and 10 mm in length	each	50.000	4.94	247.00	M-163
			MSplate30 x 3 mm	kg	1.300	60.00	78.00	M-185 /1000
			c) Overhead charges @ 8% on (a+b)				47.02	
			d) Contractor's profit @ 10% on (a+b+c)				63.47	
			Rate for each tree guard = a+b+c+d				698.21	
						say	***698.00***	
							702.00	
11.18		**New**	**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					
			Unit = quintal					
			Taking output = one quintal					
			a) Labour					
			Mate	day	0.450	329.34	148.20	L-12
			Blacksmith/ welder for cutting to design and shape and jointing	day	2.000	352.86	705.72	L-02
			Mazdoor for fixing and helper for Blacksmith/welder	day	2.500	152.91	382.27	L-13
			b) Material					
			Angle, tees, channels etc	quintal	1.050	6000.00	6300.00	M-185 /10
			Deduct the cost of scrap	quintal	0.050	-2000.00	(100.00)	M-185/10/3
			Add 5 per cent of cost of material for welding rods and other welding accessories				310.00	
			c) Overhead charges @ 8% on (a+b)				619.69	
			d) Contractor's profit @ 10% on (a+b+c)				836.59	
			Rate per quintal = a+b+c+d				9202.47	
						say	***9202.00***	
							9208.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.19		**New**	**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 two coats with paint of approved brand over a coat of priming, complete in all respects.					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Blacksmith	day	0.250	352.86	88.22	L-02
			Mazdoor	day	0.250	152.91	38.23	L-13
			b) Material					
			MS iron 25 x 6 mm	kg	19.200	60.000	1152.00	M-185 /1000
			MS iron 25 x 3 mm	kg	9.600	60.000	576.00	M-185 /1000
			Add 5 per cent of cost of material for riveting, bolting and welding accessories					
			c) Machinery					
			Tractor-trolley	hour	0.040	379.91	15.20	P&M-053
			d) Painting					
			Painting two coats including priming	sqm	1.770	52.00	92.04	Item 8.9
			e) Overhead charges @ 8% on (a+b+c)				150.89	
			f) Contractor's profit @ 10% on (a+b+c+e)				203.70	
			Rate per tree guard =a+b+c+d+e+f				2332.73	
						say	***2333.00***	
							2333.00	
		Note	1 The items of excavation and concreting to be measured and paid separately as per design .					
			2 . Rate of painting may be adopted from the chapter as Traffic signs.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.20		**New**	**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 and steel wire3 mm dia welded and fabricated as per design in two halves bolted together					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	329.34	16.47	L-12
			Blacksmith	day	0.250	352.86	88.22	L-02
			Welder	day	0.250	352.86	88.22	L-02
			Mazdoor	day	0.250	152.91	38.23	L-13
			b) Material					
			MS angle 30 x 30 x 3 mm	kg	13.500	60.00	810.00	M-185 /1000
			MS iron 25 x 3 mm	kg	18.000	60.00	1080.00	M-185 /1000
			Steel wire 3 mm dia	kg	6.000	74.10	444.60	M-199
			Add 5 per cent of cost of material for riveting, bolting and welding accessories				116.73	
			c) Machinery					
			Tractor-trolley	hour	0.040	379.91	15.20	P&M-053
			d) Painting					
			Painting two coats including priming	sqm	1.500	52.00	78.00	Item 8.9
			e) Overhead charges @ 8% on (a+b+c)				215.81	
			f) Contractor's profit @ 10% on (a+b+c+e)				291.35	
			Rate per tree guard = a+b+c+d+e+f				3282.81	
						say	***3283.00***	
							3287.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
11.21		**New**	**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					
			Unit = Hectare					
			Taking output = one hectare					
			a) Labour					
			i) Planting					
			Mate	day	2.500	329.34	823.34	L-12
			Mazdoor	day	25.000	152.91	3822.65	L-13
			ii) For Maintenance for one year					
			Mate	day	5.000	329.34	1646.68	L-12
			Mazdoor	day	50.000	152.91	7645.30	L-13
			b) Machinery					
			Dozer 80 HP @ 1000 sqm/hour	hour	10.000	2311.23	23112.33	P&M-015
			Water tanker6 KL capacity (for planting)	hour	3.000	517.53	1552.58	P&M-060
			Water tanker6 KL capacity (for maintenance)	hour	25.000	517.53	12938.20	P&M-060
			c) Material					
			Sapling 1 to 1.5 m high 2 cm dia stem	each	290.000	88.92	25787.01	M-165 x 0.8
			Add 10 per cent of sapling	each	29.000	88.92	2578.70	M-165 x 0.8
			Decayed farm yard/sludge manure (planting)	cum	60.900	98.80	6016.97	M-172
			Decayed farm yard/sludge manure (maintenance)	cum	4.000	98.80	395.20	M-172
			Pesticides for planting	kg	0.500	395.20	197.60	M-142
			Pesticides for maintenance	kg	1.500	395.20	592.80	M-142
			Cost of water	KL	18.000	55.58	1000.36	M-195
			d) Overhead charges @ 8% on (a+b+c)				7048.78	
			e) Contractor's profit @ 10% on (a+b+c+d)				9515.85	
			Rate per hectare = a+b+c+d+e				104674.36	
						say	***104674.00***	

104682.00

CHAPTER-12
FOUNDATIONS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.1	**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**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Manual Means**					
		(i)	**Depth upto 3 m**					
			a) Labour					
			Mate	day	0.14	329.34	46.11	L-12
			Mazdoor	day	3.50	152.91	535.17	L-13
			b) Overhead charges @ 0.25 on (a)				145.32	
			c) Contractor's profit @ 0.1 on (a+b)				72.66	
			Cost for 10 cum = a+b+c				799.26	
			Rate per cum = (a+b+c)/10				79.93	
						say	***80.00***	
		Note	1. Cost of dewatering may be added where required upto, 10 percent of labour cost assessment for dewatering shall be made as per site conditions.					
			2.The excavated earth can be used partially for backfilling of foundation pit and partly for road work except for marshy soil. Hence cost of disposal has not been added except for marshy soil. This remark is common to all cases of item 12.1 excluding marshy soil.					
			3.The cost of shoring and shuttering, where needed, may be added @ 1 per cent on cost of excavation for open foundation.					
12.1 (I) A		**(ii)**	**Depth 3 m to 6 m**					
			a) Labour					
			Mate/Supervisor	day	0.18	329.34	59.28	L-12
			Mazdoor	day	4.50	152.91	688.08	L-13
			b) Overhead charges @ 0.25 on (a)				186.84	
			c) Contractor's profit @ 0.1 on (a+b)				93.42	
			Cost for 10 cum = a+b+c				1027.62	
			Rate per cum = (a+b+c)/10				102.76	
						say	***103.00***	
		Note	Cost of dewatering may be added where required upto 15 per cent of labour cost. Assessment for dewatering shall be done as per actual ground conditions.					
12.1 (I) A		**(iii)**	**Depth above 6 m**					
			a) Labour					
			Mate/Supervisor	day	0.24	329.34	79.04	L-12
			Mazdoor	day	6.00	152.91	917.44	L-13
			b) Overhead charges @ 0.25 on (a)				249.12	
			c) Contractor's profit @ 0.1 on (a+b)				124.56	
			Cost for 10 cum = a+b+c				1370.16	
			Rate per cum = (a+b+c)/10				137.02	
						say	***137.00***	
		Note	1. Cost of dewatering may be added where required upto 20 per cent of labour cost. Assessment for dewatering shall be made as per site conditions..					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.1 (I)		B	**Mechanical Means**					
		(i)	**Depth upto 3 m**					
			Unit = cum					
			Taking output = 240 cum					
			a) Labour					
			Mate	day	0.32	329.34	105.39	L-12
			Mazdoor	day	8.00	152.91	1223.25	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1621.98	9731.88	P&M-026
			c) Overhead charges @ 0.25 on (a+b)				2765.13	
			d) Contractor's profit @ 0.1 on (a+b+c)				1382.56	
			Cost for 240 cum = a+b+c+d				15208.21	
			Rate per cum = (a+b+c+d)/240				63.37	
						say	***63.00***	
							63.00	
		Note	Cost of dewatering upto 5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
12.1 (I) B		(ii)	**Depth 3 m to 6 m**					
			Unit = cum					
			Taking output = 210 cum					
			a) Labour					
			Mate	day	0.32	329.34	105.39	L-12
			Mazdoor	day	8.00	152.91	1223.25	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1621.98	9731.88	P&M-026
			c) Overhead charges @ 0.25 on (a+b)				2765.13	
			d) Contractor's profit @ 0.1 on (a+b+c)				1382.56	
			Cost for 210 cum = a+b+c+d				15208.21	
			Rate per cum = (a+b+c+d)/210				72.42	
						say	***72.00***	
							72.00	
		Note	Cost of dewatering upto 7.5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
12.1 (I) B		(iii)	**Depth above 6m**					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.40	329.34	131.73	L-12
			Mazdoor	day	10.00	152.91	1529.06	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1621.98	9731.88	P&M-026
			c) Overhead charges @ 0.25 on (a+b)				2848.17	
			d) Contractor's profit @ 0.1 on (a+b+c)				1424.08	
			Cost for 180 cum = a+b+c+d				15664.93	
			Rate per cum = (a+b+c+d)/180				87.03	
						say	***87.00***	
							87.00	
		Note	1. Cost of dewatering upto 10 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions.					
			2.Labour provided for excavation by mechanical means includes that required for trimming of bottom and side slopes.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.3	304		**Sand Filling in Foundation Trenches as per Drawing & Technical Specification**					
			Unit = cum					
			Taking output = 1 cum					
			a) Labour					
			Mate	day	0.01	329.34	3.29	L-12
			Mazdoor	day	0.30	152.91	45.87	L-13
			b) Material					
			Sand (assuming 20 per cent voids)	cum	1.20	1293.82	1552.58	M-006
			c) Overhead charges @ 0.25 on (a+b)				400.44	
			d) Contractor's profit @ 0.1 on (a+b+c)				200.22	
			Rate per cum = a+b+c+d				2202.41	
						say	***2202.00***	
							2202.00	
12.5	1300		**Brick Masonry Work in Cement Mortar 1:3 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.**					
			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	8.23	20583.50	M-084
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.20	5945.00	7134.00	Item 12.6 (A)
			b) Labour					
			Mate	day	0.48	329.34	158.08	L-12
			Mason	day	4.00	352.86	1411.44	L-11
			Mazdoor	day	8.00	152.91	1223.25	L-13
			c) Overhead charges @ 0.25 on (a+b)				7627.57	
			d) Contractor's profit @ 0.1 on (a+b+c)				3813.78	
			Cost for 5 cum = a+b+c+d				41951.62	
			Rate per cum (a+b+c+d)/5				8390.32	
						say	***8390.00***	
		(i)	**Rate for Brick Work in C. M. 1:2 in foundation**				***8823.00***	
		(ii)	**Rate for Brick Work in C. M. 1:3 in foundation**				***8390.00***	
		(iii)	**Rate for Brick Work in C. M. 1:4 in foundation**				***8093.00***	
		(iv)	**Rate for Brick Work in C. M. 1:6 in foundation**				***7847.00***	
12.6	Sub-analysis	(A)	**Cement Mortar 1:3 (1 cement : 3 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.51	8939.12	4558.95	M-086
			Sand	cum	1.05	1176.20	1235.01	M-005
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor	day	0.90	152.91	137.62	L-13
			Total Material and Labour = (a+b)			***say***	**5945.00**	
							5945.00	
	Sub-analysis (Addl.)	(B)	**Cement Mortar1:2 (1cement :2 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.672	8939.12	6007.09	M-086
			Sand	cum	0.933	1176.20	1097.79	M-005
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor	day	0.90	152.91	137.62	L-13

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Total Material and Labour = (a+b)			*say*	**7256.00**	
							7256.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
	Sub-analysis (Addl.)	**(C)**	**Cement Mortar1:4 (1cement :4 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.40	8939.12	3575.65	M-086
			Sand	cum	1.12	1176.20	1317.34	M-005
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor	day	0.90	152.91	137.62	L-13
			Total Material and Labour = (a+b)			***say***	**5044.00**	
							5044.00	
	Sub-analysis (Addl.)	**(D)**	**Cement Mortar1:6 (1cement :6 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.288	8939.12	2574.47	M-086
			Sand	cum	1.337	1176.20	1572.75	M-005
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor	day	0.90	152.91	137.62	L-13
			Total Material and Labour = (a+b)			***say***	**4298.00**	
							4298.00	
12.7	**1400**		**Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications.**					
			Unit = cum					
			Taking output = 5 cum					
	1405.4	**(A)**	**Square Rubble Coursed Rubble Masonry (first sort)**					
			a) Material					
			Stone	cum	5.50	1074.46	5909.52	M-175
			Through and bond stone	each	35.00	6.80	237.95	M-188
			(35no.x0.24mx0.24mx0.39m = 0.79 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.50	5945.00	8917.50	Item 12.6 (A)
			b) Labour					
			Mate	day	0.66	329.34	217.36	L-12
			Mason	day	7.50	352.86	2646.45	L-11
			Mazdoor	day	9.00	152.91	1376.15	L-13
			c) Overhead charges @ 0.25 on (a+b)				4826.23	
			d) Contractor's profit @ 0.1 on (a+b+c)				2413.12	
			Cost for 5 cum = a+b+c+d				26544.28	
			Rate per cum (a+b+c+d)/5				5308.86	
						say	***5309.00***	
							5321.00	
	1405.3	**(B)**	**Random Rubble Masonry**					
			(coursed/uncoursed)					
			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Stone	cum	5.50	802.76	4415.16	M-153
			Through and bond stone	each	35.00	6.80	237.95	M-188
			(35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.55	5945.00	9214.75	Item 12.6 (A)
			b) Labour					
			Mate	day	0.62	329.34	204.19	L-12
			Mason	day	6.00	352.86	2117.16	L-11

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	9.00	152.91	1376.15	L-13
			c) Overhead charges @ 0.25 on (a+b)				4391.34	
			d) Contractor's profit @ 0.1 on (a+b+c)					2195.67
			Cost for 5 cum = a+b+c+d				21956.70	
			Rate per cum (a+b+c+d)/5				4391.34	
						say	***4391.00***	
							4401.00	
		Note	The labour already considered in cement mortar has been taken into account while proposing labour for masonry works.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.8	**1500, 1700 & 2100**		**Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.**					
		A	**PCC Grade M15**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	4.13	8939.12	36918.57	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			40 mm Aggregate	cum	8.10	1411.44	11432.66	M-055
			20 mm Aggregate	cum	4.05	1529.06	6192.69	M-053
			10 mm Aggregate	cum	1.35	1529.06	2064.23	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 63 KVA	hour	6.00	604.57	3627.40	P&M-019
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***4899.00***			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				2938.84	
			e) Overhead charges @ 0.25 on (a+b+c+d)				19102.49	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				9551.24	
			Cost for 15 cum = a+b+c+d+e+f				105063.67	
			Rate per cum = (a+b+c+d+e+f)/15				7004.24	
						say	***7004.00***	
							7004.00	
		Note	Needle Vibrator is an item of minor T & P which is already included in overhead charges. Hence not added in rate analysis of cement concrete works.					
12.8		**B**	**PCC Grade M20**					
			Unit : cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.16	8939.12	46125.86	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			40 mm Aggregate	cum	5.40	1411.44	7621.78	M-055
			20 mm Aggregate	cum	5.40	1529.06	8256.92	M-053
			10 mm Aggregate	cum	2.70	1529.06	4128.46	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***5438.00***			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				3262.53	
			e) Overhead charges @ 0.25 on (a+b+c+d)				21206.47	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				10603.24	
			Cost for 15 cum = a+b+c+d+e+f				116635.60	
			Rate per cum = (a+b+c+d+e+f)/15				7775.71	
						say	***7776.00***	
							7776.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.8		**C**	**RCC Grade M20**					
12.8 C		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	41.66	8939.12	372403.74	M-086
			Coarse Sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 km, L-lead in km	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***5724.00***			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				27470.44	
			e) Overhead charges @ 0.25 on (a+b+c+d)				178557.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				89278.94	
			Cost for 120 cum = a+b+c+d+e+f				982068.33	
			Rate per cum = (a+b+c+d+e+f)/120				8183.90	
						say	***8184.00***	
							8184.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.8		E	**RCC Grade M25**					
12.8 E		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Unit: cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	48.38	8939.12	432474.63	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity 1 cum	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6224.00***			
			d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				28006.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				193709.54	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				96854.77	
			cost of 120 cum = a+b+c+d+e+f				1065402.46	
			Rate per cum (a+b+c+d+e+f)/120				8878.35	
						say	***8878.00***	
							8878.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.8		G	**RCC Grade M30**					
12.8 G		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.80	8939.12	436229.06	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6255.00***			
			d) Formwork @ 3.5 per cent of cost of concrete i.e. cost of material, labour and machinery				26270.52	
			e) Overhead charges @ 0.25 on (a+b+c+d)				194214.23	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				97107.11	
			cost of 120 cum = a+b+c+d+e+f				1068178.25	
			Rate per cum (a+b+c+d+e+f)/120				8901.49	
						say	***8901.00***	
							8901.00	
12.8		H	**RCC Grade M35**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.33	8939.12	56584.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6178.00***			
			d) Formwork @ 3 per cent on a+b+c				2779.72	
			e) Overhead charges @ 0.25 on (a+b+c+d)				23859.25	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				11929.62	
			cost of 15 cum = a+b+c+d+e+f				131225.86	
			Rate per cum = (a+b+c+d+e+f)/15				8748.39	
						say	***8748.00***	
							8748.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.8 H		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit ; cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	50.64	8939.12	452677.04	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6392.00***			
			d) Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				23011.03	
			e) Overhead charges @ 0.25 on (a+b+c+d)				197511.35	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				98755.67	
			cost of 120 cum = a+b+c+d+e+f				1086312.42	
			Rate per cum = (a+b+c+d+e+f)/120				9052.60	
						say	***9053.00***	
							9053.00	
		Note:	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
			WELL FOUNDATION					
12.9	**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 1.25 m including Royality for earth @ Rs. 3768.00 for each Island.**					
			Unit = 1 No					
			Taking output = 1 No.					
			a) Material					
			Earth (compacted)	cum	251.20	49.4	12409.38	M-098
			Sand bags	each	750.00	24.70	18525.15	M-164
			b) Labour					
			Mate	day	0.40	329.34	131.73	L-12
			Mazdoor for filling sand bags, stitching and placing	day	15.00	152.91	2293.59	L-13
			c) Machinery					
			Crane with grab 1 cum capacity	hour	20.00	892.74	17854.72	P&M-012
			Consumables @ 2.5 per cent of (c) above				446.37	
			d) Overhead charges @ 0.25 on (a+b+c)				12915.23	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6457.62	
			Rate per No. (a+b+c+d+e)				71033.79	
						say	***71034.00***	
							71034.00	
		Note	It is assumed that earth will be available within the working space of crane with grab bucket.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.9		**B**	**Assuming depth of water 4.0 m and height of island 4.5 m including Royality for earth @ Rs. 13565.00 for each Island.**					
			Unit = 1No					
			Taking output = 1 No					
			a) Material					
			Earth (compacted)	cum	904.32	49.40	44673.77	M-098
			Sand bags	each	6000.00	24.70	148201.20	M-164
			Wooden ballies 8" Dia and 9 m long	each	95.00	4754.79	451704.91	M-201
			Wooden ballies 2" Dia for bracing	metre	190.00	302.58	57489.72	M-200
			b) Labour					
			Mate	day	5.60	329.34	1844.28	L-12
			Mazdoor for piling 8" dia ballies for piling 8" dia ballies	day	18.00	152.91	2752.31	L-13
			Mazdoor for bracing with 2" dia ballies	day	12.00	152.91	1834.87	L-13
			Mazdoor for filling sand bags, stitching and placing	day	110.00	152.91	16819.66	L-13
			c) Machinery					
			Crane with grab 1 cum capacity	hour	50.00	892.74	44636.79	P&M-012
			Consumables and other arrangements for piling ballies @ 2.5 per cent of (a+b+c).				19248.94	
			d) Overhead charges @ 0.25 on (a+b+c)				197301.61	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				98650.81	
			Rate per No. (a+b+c+d+e)				1085158.86	
						say	***1085159.00***	
							*******	
		Note	For other well diameters rate can be worked out on the basis of cross-sectional area of well. The diameter of the island shall be in the conformity with clause 1203.2 of MoRTH specifications.					
12.9	**C**		**Providing and constructing one span service road to reach island location from one pier location to another pier location including Royality for earth @ Rs. 225.00 per m for service Road.**					
			Assuming span length 30 m, width of service road 10m and depth of water 1m					
			Unit = 1 meter					
			Taking output = 30 metre					
			a) Material					
			Earth	cum	450.00	49.40	22230.18	M-098
			Sand bags	each	300.00	24.70	7410.06	M-164
			b) Labour					
			Mate	day	0.24	329.34	79.04	L-12
			Mazdoor for filling sand bags, stitching and placing	day	6.00	152.91	917.44	L-13
			c) Machinery					
			Front end Loader 1 cum capacity	hour	27.00	803.34	21690.30	P&M-017
			Tipper 5.5 cum capacity	hour	28.00	491.65	13766.24	P&M-048
			d) Overhead charges @ 0.25 on (a+b+c)				16523.32	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				8261.66	
			Cost for 30 m (a+b+c+d+e)				90878.24	
			Rate per m (a+b+c+d+e)/30				3029.27	
						say	***3029.00***	
							3029.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.10	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.**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			Structural steel in plates, angles, etc including 5 per cent wastage	tonne	1.05	60000.00	63000.00	M-185
			Nuts & bolts	Kg	20.00	87.69	1753.71	M-136
			b) Labour					
			(for cutting, bending, making holes, joining, welding and erecting in position)					
			Mate	day	1.32	329.34	434.72	L-12
			Fitter	day	5.50	235.24	1293.82	L-08
			Blacksmith	day	5.50	352.86	1940.73	L-02
			Welder	day	5.50	352.86	1940.73	L-02
			Mazdoor	day	16.50	152.91	2522.95	L-13
			Electrodes, cutting gas and other consumables @ 10 per cent of cost of (a) above				6475.37	
			c) Overhead charges @ 0.25 on (a+b)				19840.51	
			d) Contractor's profit @ 0.1 on (a+b+c)				9920.25	
			Rate per MT (a+b+c+d)				109122.80	
						say	***109123.00***	
							109123.00	
12.11	1200, 1500 & 1700		**Plain/Reinforced Cement Concrete, in Well Foundation complete as per Drawing and Technical Specification.**					
			Unit = 1 cum					
			Taking output = 1 cum					
		A	**Well curb**					
		(i)	**RCC M20 Grade**					
			Same as for 12.8 (C) except for formwork which shall be@ 20 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5510.00	Item 12.8 (C)
			d) formwork @ 20 per cent of the cost of concrete				1102.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1653.00	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				826.50	
			Rate perm (a+b+c+d+e+f)				9091.50	
						say	***9092.00***	
							9092.00	
12.11 A (i)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5380.00	Item 12.8 (C)
			d) formwork @ 20 per cent of the cost of concrete				1076.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1614.00	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				807.00	
			Rate perm (a+b+c+d+e+f)				8877.00	
						say	***8877.00***	
							8877.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 A		(ii)	**RCC M25 Grade**					
			Same as for 12.8 (E) except for formwork which shall be@ 20 per cent of the cost of concrete instead of 3.75 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6011.00	Item 12.8 (E)
			d) formwork @ 20 per cent of the cost of concrete				1202.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1803.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				901.65	
			Rate perm (a+b+c+d+e+f)				9918.15	
						say	***9918.00***	
							9918.00	
12.11 A (ii)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6224.00	Item 12.8 (E)
			d) formwork @ 20 per cent of the cost of concrete				1244.80	DIR used item
			e) Overhead charges @ 0.25 on (a+b+c+d)				1867.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				933.60	
			Rate perm (a+b+c+d+e+f)				10269.60	
						say	***10270.00***	
							10270.00	
12.11 A		(iii)	**RCC M35 Grade**					
			Same as for 12.8 (H) except for formwork which shall be@ 20 per cent of the cost of concrete instead of 3.0 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6178.00	Item 12.8 (H) Case I
			d) formwork @ 20 per cent of the cost of concrete				1235.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1853.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				926.70	
			Rate perm (a+b+c+d+e+f)				10193.70	
						say	***10194.00***	
							10194.00	
12.11 A (iii)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6674.00	Item 12.8 (H)
			d) formwork @ 20 per cent of the cost of concrete				1334.80	DIR used item
			e) Overhead charges @ 0.25 on (a+b+c+d)				2002.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				1001.10	
			Rate perm (a+b+c+d+e+f)				11012.10	
						say	***11012.00***	
							11012.00	
		Note.	If curb concrete is carried out within steel liner, cost of formwork shall be excluded.					
12.11		B	**Well steining**					
		(I)	**PCC M15 Grade**					
			Same as for 12.8 (A) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4899.00	Item 12.8 (A)
			d) formwork @ 10 per cent of the cost of concrete				489.90	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1347.23	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				673.61	
			Rate perm (a+b+c+d+e+f)				7409.74	
						say	***7410.00***	
							7410.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 B		(ii)	**PCC M20 Grade**					
			Same as for 12.8 (B) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5438.00	Item 12.8 (B) PCC
			d) formwork @ 10 per cent of the cost of concrete				543.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1495.45	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				747.73	
			Rate perm (a+b+c+d+e+f)				8224.98	
						say	***8225.00***	
							8225.00	
12.11 B		(iii)	**RCC M20 Grade**					
			Same as for 12.8 (C) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5510.00	Item 12.8 (C)
			d) formwork @ 10 per cent of the cost of concrete				551.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1515.25	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				757.63	
			Rate perm (a+b+c+d+e+f)				8333.88	
						say	***8334.00***	
							8334.00	
12.11 B (iii)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5380.00	Item 12.8 (C)
			d) formwork @ 10 per cent of the cost of concrete				538.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1479.50	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				739.75	
			Rate perm (a+b+c+d+e+f)				8137.25	
						say	***8137.00***	
							8137.00	
12.11 B		(iv)	**PCC M25 Grade**					
			Same as for 12.8 (D) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5933.00	Item 12.8 (D)
			d) formwork @ 10 per cent of the cost of concrete				593.30	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1631.58	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				815.79	
			Rate perm (a+b+c+d+e+f)				8973.66	
						say	***8974.00***	
							8974.00	
12.11 B (iv)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5806.00	Item 12.8 (D)
			d) formwork @ 10 per cent of the cost of concrete				580.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1596.65	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				798.33	
			Rate perm (a+b+c+d+e+f)				8781.58	
						say	***8782.00***	
							8782.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
'12.11 B		(v)	**RCC M25 Grade**					
			Same as for 12.8 (E) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6011.00	Item 12.8 (E)
			d) formwork @ 10 per cent of the cost of concrete				601.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1653.03	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				826.51	
			Rate perm (a+b+c+d+e+f)				9091.64	
						say	***9092.00***	
							9092.00	
12.11 B (v)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6224.00	Item 12.8 (E)
			d) formwork @ 10 per cent of the cost of concrete				622.40	DIR used item
			e) Overhead charges @ 0.25 on (a+b+c+d)				1711.60	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				855.80	
			Rate perm (a+b+c+d+e+f)				9413.80	
						say	***9414.00***	
							9414.00	
'12.11 B		(vi)	**PCC M30 Grade**					
			Same as for 12.8 (F) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5986.00	Item 12.8 (F)
			d) formwork @ 10 per cent of the cost of concrete				598.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1646.15	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				823.08	
			Rate perm (a+b+c+d+e+f)				9053.83	
						say	***9054.00***	
							9054.00	
12.11 B (vi)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5855.00	Item 12.8 (F)
			d) formwork @ 10 per cent of the cost of concrete				585.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1610.13	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				805.06	
			Rate perm (a+b+c+d+e+f)				8855.69	
						say	***8856.00***	
							8856.00	
'12.11 B		(vii)	**RCC M30 Grade**					
			Same as for 12.8 (G) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6041.00	Item 12.8 (G)
			d) formwork @ 10 per cent of the cost of concrete				604.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1661.28	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				830.64	
			Rate perm (a+b+c+d+e+f)				9137.01	
						say	***9137.00***	
							9137.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 B (vii)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6255.00	Item 12.8 (G)
			d) formwork @ 10 per cent of the cost of concrete				625.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1720.13	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				860.06	
			Rate perm (a+b+c+d+e+f)				9460.69	
						say	***9461.00***	
							9461.00	
'12.11 B		**(viii)**	**RCC M35 Grade**					
			Same as for 12.8 (H) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6178.00	Item 12.8 (H) Case I
			d) formwork @ 10 per cent of the cost of concrete				617.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1698.95	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				849.48	
			Rate perm (a+b+c+d+e+f)				9344.23	
						say	***9344.00***	
							9344.00	
12.11 B (viii)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6674.00	Item 12.8 (H)
			d) formwork @ 10 per cent of the cost of concrete				667.40	DIR used item
			e) Overhead charges @ 0.25 on (a+b+c+d)				1835.35	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				917.68	
			Rate perm (a+b+c+d+e+f)				10094.43	
						say	***10094.00***	
							10094.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
'12.11 B		(ix)	**RCC M40 Grade**					
			Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	51.60	8939.12	461258.59	M-086
			Coarse Sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture	kg	206.00	166.73	34345.63	M-186
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300xL	47.05	42343.20	Lead= 3 , P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6750.00***			
			d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery				80996.15	
			e) Overhead charges @ 0.25 on (a+b+c+d)				222739.43	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				111369.71	
			cost of 120 cum = a+b+c+d+e+f				1225066.84	
			Rate per cum = (a+b+c+d+e+f)/120				10208.89	
						say	***10209.00***	
							10209.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 C		**C**	**Bottom Plug**					
			Concrete to be placed using tremie pipe					
			Note: 10% extra cement to be added where under water concreting is involved					
		(i)	**PCC Grade M20**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.55	8939.12	49612.12	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			40 mm Aggregate	cum	5.40	1411.44	7621.78	M-055
			20 mm Aggregate	cum	5.40	1529.06	8256.92	M-053
			10 mm Aggregate	cum	2.70	1529.06	4128.46	M-051
			Admixture	Kg	18.60	166.73	3101.11	M-186
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	374.03	2244.19	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6028.00***			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				4227.18	
			d) Overhead charges @ 0.25 on (a+b+c)				23658.82	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11829.41	
			cost of 15 cum = a+b+c+d+e				130123.48	
			Rate per cum = (a+b+c+d+e)/15				8674.90	
						say	***8675.00***	
							8675.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 C (i)		Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Unit ; cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	44.40	8939.12	396896.93	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture	Kg	148.80	166.73	24808.88	M-186
			b) Labour					
			Mate	day	0.88	329.34	289.82	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6134.00***			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				32722.99	
			d) Overhead charges @ 0.25 on (a+b+c)				192199.83	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				96099.91	
			cost of 120 cum = a+b+c+d+e				1057099.04	
			Rate per cum = (a+b+c+d+e)/120				8809.16	
						say	***8809.00***	
							8809.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
'12.11 C		(ii)	**PCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.99	8939.12	53545.33	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			40 mm Aggregate	cum	5.40	1411.44	7621.78	M-055
			20 mm Aggregate	cum	5.40	1529.06	8256.92	M-053
			10 mm Aggregate	cum	2.70	1529.06	4128.46	M-051
			Admixture	Kg	21.60	166.73	3601.29	M-186
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	374.03	2244.19	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6323.00***			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				4448.85	
			d) Overhead charges @ 0.25 on (a+b+c)				24822.58	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12411.29	
			cost of 15 cum = a+b+c+d+e				136524.19	
			Rate per cum = (a+b+c+d+e)/15				9101.61	
						say	***9102.00***	
							9102.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 C (ii)		Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	47.88	8939.12	428005.07	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture	Kg	172.80	166.73	28810.31	M-186
			b) Labour					
			Mate	day	0.88	329.34	289.82	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6427.00***			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				34478.47	
			d) Overhead charges @ 0.25 on (a+b+c)				201416.09	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				100708.04	
			cost of 120 cum = a+b+c+d+e				1107788.48	
			Rate per cum = (a+b+c+d+e)/120				9231.57	
						say	***9232.00***	
							9232.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
'12.11 C		(iii)	**PCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.08	8939.12	54349.85	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			40 mm Aggregate	cum	5.40	1411.44	7621.78	M-055
			20 mm Aggregate	cum	5.40	1529.06	8256.92	M-053
			10 mm Aggregate	cum	2.70	1529.06	4128.46	M-051
			Admixture	Kg	21.60	166.73	3601.29	M-186
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	374.03	2244.19	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6377.00***			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				4489.07	
			d) Overhead charges @ 0.25 on (a+b+c)				25033.77	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12516.88	
			cost of 15 cum = a+b+c+d+e				137685.72	
			Rate per cum = (a+b+c+d+e)/15				9179.05	
						say	***9179.00***	
							9179.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 C (iii)		Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.64	8939.12	434798.80	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture	Kg	172.80	166.73	28810.31	M-186
			b) Labour					
			Mate	day	0.88	329.34	289.82	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6484.00***			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				34818.15	
			d) Overhead charges @ 0.25 on (a+b+c)				203199.44	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				101599.72	
			cost of 120 cum = a+b+c+d+e				1117596.93	
			Rate per cum = (a+b+c+d+e)/120				9313.31	
						say	***9313.00***	
							9313.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
'12.11 C		(iv)	**PCC Grade M35**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.29	8939.12	56227.06	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			40 mm Aggregate	cum	5.40	1411.44	7621.78	M-055
			20 mm Aggregate	cum	5.40	1529.06	8256.92	M-053
			10 mm Aggregate	cum	2.70	1529.06	4128.46	M-051
			Admixture	Kg	21.60	166.73	3601.29	M-186
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	374.03	2244.19	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6502.00***			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				4582.93	
			d) Overhead charges @ 0.25 on (a+b+c)				25526.54	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12763.27	
			cost of 15 cum = a+b+c+d+e				140395.95	
			Rate per cum = (a+b+c+d+e)/15				9359.73	
						say	***9360.00***	
							9360.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 C (iv)		Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.28	8939.12	449458.95	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture	Kg	172.80	166.73	28810.31	M-186
			b) Labour					
			Mate	day	0.88	329.34	289.82	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6606.00***			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				35551.16	
			d) Overhead charges @ 0.25 on (a+b+c)				207047.73	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				103523.87	
			cost of 120 cum = a+b+c+d+e				1138762.53	
			Rate per cum = (a+b+c+d+e)/120				9489.69	
						say	***9490.00***	
							9490.00	
12.11		D	**Intermediate plug**					
		(i)	**Grade M20 PCC**					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6028.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1507.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				753.50	
			Rate per cum = (a+b+c+d+e)				8288.50	
						say	***8289.00***	
							8289.00	
12.11 D (i)		Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6134.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1533.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				766.75	
			Rate per cum = (a+b+c+d+e)				8434.25	
						say	***8434.00***	
							8434.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
'12.11 D		(ii)	**Grade M25 PCC**					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6323.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1580.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				790.38	
			Rate per cum = (a+b+c+d+e)				8694.13	
						say	***8694.00***	
							8694.00	
12.11 D (ii)		Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6427.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1606.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				803.38	
			Rate per cum = (a+b+c+d+e)				8837.13	
						say	***8837.00***	
							8837.00	
'12.11 D		(iii)	**Grade M30 PCC**					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6377.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1594.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				797.13	
			Rate per cum = (a+b+c+d+e)				8768.38	
						say	***8768.00***	
							8768.00	
12.11 D (iii)		Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6484.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1621.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				810.50	
			Rate per cum = (a+b+c+d+e)				8915.50	
						say	***8916.00***	
							8916.00	
12.11		E	**Top plug**					
		(i)	**Grade M15 PCC**					
			Same as Item 12.8(a) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				4899.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1224.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				612.38	
			Rate per cum = (a+b+c+d+e)				6736.13	
						say	***6736.00***	
'12.11 E		(ii)	**Grade M20 PCC**				***6736.00***	
			Same as Item 12.8(b) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5438.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1359.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				679.75	
			Rate per cum = (a+b+c+d+e)				7477.25	
						say	***7477.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
'12.11 E		(iii)	**Grade M25 PCC**				***7477.00***	
			Same as Item 12.8 (d) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5933.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1483.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				741.63	
			Rate per cum = (a+b+c+d+e)				8157.88	
						say	***8158.00***	
							8158.00	
12.11 E (iii)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5806.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1451.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				725.75	
			Rate per cum = (a+b+c+d+e)				7983.25	
						say	***7983.00***	
							7983.00	
'12.11 E		(iv)	**Grade M30 PCC**					
			Same as Item 12.8(f) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5986.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1496.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				748.25	
			Rate per cum = (a+b+c+d+e)				8230.75	
						say	***8231.00***	
							8231.00	
12.11 E (iv)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				5855.00	
			d) Overhead charges @ 0.25 on (a+b+c)				1463.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				731.88	
			Rate per cum = (a+b+c+d+e)				8050.63	
						say	***8051.00***	
							8051.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11		F	**Well cap**					
		(i)	**RCC Grade M20**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.12	8939.12	45768.29	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Form Work @ 4 per cent of a+b+c				3273.64	
			d) Overhead charges @ 0.25 on (a+b+c)				21278.64	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				10639.32	
			cost of 15 cum = a+b+c+d+e				117032.54	
			Rate per cum = (a+b+c+d+e)/15				7802.17	
						say	***7802.00***	
							7802.00	
12.11 F (i)		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	40.92	8939.12	365788.79	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader (capacity 1 cum)	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Formwork @ 4 per cent of (a+b+c)				27205.84	
			d) Overhead charges @ 0.25 on (a+b+c)				176837.99	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				88419.00	
			cost of 120 cum = a+b+c+d+e				972608.95	
			Rate per cum = (a+b+c+d+e)/120				8105.07	
						say	***8105.00***	
							8105.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 F		(ii)	**RCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.05	8939.12	54081.68	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Form Work @ 3.75 per cent of a+b+c				3380.79	
			d) Overhead charges @ 0.25 on (a+b+c)				23383.78	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11691.89	
			cost of 15 cum = a+b+c+d+e				128610.77	
			Rate per cum = (a+b+c+d+e)/15				8574.05	
						say	***8574.00***	
							8574.00	
12.11 F (ii)		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.40	8939.12	432653.41	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader (capacity 1 cum)	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Formwork @ 3.75 per cent of (a+b+c)				28012.90	
			d) Overhead charges @ 0.25 on (a+b+c)				193755.91	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				96877.95	
			cost of 120 cum = a+b+c+d+e				1065657.50	
			Rate per cum = (a+b+c+d+e)/120				8880.48	
						say	***8880.00***	
							8880.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 F		(iii)	**RCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.10	8939.12	54528.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Formwork @ 3.5 per cent of (a+b+c)				3171.04	
			d) Overhead charges @ 0.25 on (a+b+c)				23443.08	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11721.54	
			cost of 15 cum = a+b+c+d+e				128936.94	
			Rate per cum = (a+b+c+d+e)/15				8595.80	
						say	***8596.00***	
							8596.00	
12.11 F (iii)		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.79	8939.12	436139.66	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader (capacity 1 cum)	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Formwork @ 3.5 per cent of (a+b+c)				26267.39	
			d) Overhead charges @ 0.25 on (a+b+c)				194191.10	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				97095.55	
			cost of 120 cum = a+b+c+d+e				1068051.03	
			Rate per cum = (a+b+c+d+e)/120				8900.43	
						say	***8900.00***	
							8900.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 F		(iv)	**RCC Grade M35**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.33	8939.12	56584.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Formwork @ 3 per cent of (a+b+c)				2779.72	
			d) Overhead charges @ 0.25 on (a+b+c)				23859.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11929.62	
			cost of 15 cum = a+b+c+d+e				131225.86	
			Rate per cum = (a+b+c+d+e)/15				8748.39	
						say	***8748.00***	
							8748.00	
12.11 F (iv)		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.64	8939.12	452677.04	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader (capacity 1 cum)	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Formwork @ 3 per cent of (a+b+c)				23011.03	
			d) Overhead charges @ 0.25 on (a+b+c)				197511.35	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				98755.67	
			cost of 120 cum = a+b+c+d+e				1086312.42	
			Rate per cum = (a+b+c+d+e)/120				9052.60	
						say	***9053.00***	
							9053.00	
		Note	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
'12.11 F		(v)	**RCC M40 Grade**					
			Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	52.20	8939.12	466622.06	M-086
			Coarse Sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture	kg	206.00	166.73	34345.63	M-186
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader 1 cum capacity	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	973.89	14608.40	P&M-049
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300.L	47.05	42343.20	P&M-050 Lead= 3 km
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				24459.75	
			d) Overhead charges @ 0.25 on (a+b+c)				209946.19	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				104973.10	
			cost of 120 cum = a+b+c+d+e				1154704.06	
			Rate per cum = (a+b+c+d+e)/120				9622.53	
						say	***9623.00***	
							9623.00	
12.12	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.**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 6 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.50 m per hour.					
			a) Labour					
			Mate	day	0.12	329.34	39.52	L-12
			Sinker (skilled)	day	1.00	244.65	244.65	L-15
			Sinking helper (semi-skilled)	day	2.00	176.43	352.86	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	2.00	1393.80	2787.59	P&M-075
			Consumables in sinking @10 per cent of (b)				278.76	
			c) Overhead charges @ 0.25 on (a+b)				925.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				462.92	
			Rate per metre = (a+b+c+d)				5092.15	
						say	***5092.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.12 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.33 m per hour.					
			a) Labour					
			Mate	day	0.15	329.34	49.40	L-12
			Sinker	day	1.25	244.65	305.81	L-15
			Sinking helper (semi-skilled)	day	2.50	176.43	441.08	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	1393.80	4181.39	P&M-075
			Consumables in sinking @10 per cent of (b)				418.14	
			c) Overhead charges @ 0.25 on (a+b)				1348.95	
			d) Contractor's profit @ 0.1 on (a+b+c)				674.48	
			Rate per metre = (a+b+c+d)				7419.25	
						say	***7419.00***	
12.12 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	7790.00			
			12th m	5%	8180.00			
			13th m	5%	8589.00			
			14th m	5%	9018.00			
			15th m	5%	9469.00			
			16th m	5%	9942.00			
			17th m	5%	10439.00			
			18th m	5%	10961.00			
			19th m	5%	11509.00			
			20th m	5%	12084.00			
			Total Cost from 10m upto 20m		97981.00			
			Avg Rate per metre		***9798.00***			
12.12 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	12990.00	15588.00		
			22nd m	7.5%	13964.00	16757.00		
			23rd m	7.5%	15011.00	18013.00		
			24th m	7.5%	16137.00	19364.00		
			25th m	7.5%	17347.00	20816.00		
			26th m	7.5%	18648.00	22378.00		
			27th m	7.5%	20047.00	24056.00		
			28th m	7.5%	21551.00	25861.00		
			29th m	7.5%	23167.00	27800.00		
			30th m	7.5%	24905.00	29886.00		
			Total Cost from 20m upto 30m		183767.00	220519.00		
			Avg Rate per metre		***18377.00***	***22052.00***		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.12 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	27396.00	32875.00		
			32nd	10%	30136.00	36163.00		
			33rd m	10%	33150.00	39780.00		
			34th m	10%	36465.00	43758.00		
			35th m	10%	40112.00	48134.00		
			36th m	10%	44123.00	52948.00		
			37th m	10%	48535.00	58242.00		
			38th m	10%	53389.00	64067.00		
			39th m	10%	58728.00	70474.00		
			40th m	10%	64601.00	77521.00		
			Total Cost from 30m upto 40m		436635.00	523962.00		
			Avg Rate per metre		***43664.00***	***52396.00***		
12.12		**B**	**Clayey Soil (6m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 meter					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.33 m per hour.					
			a) Labour					
			Mate	day	0.15	329.34	49.40	L-12
			Sinker (skilled)	day	1.50	244.65	366.97	L-15
			Sinking helper (semi-skilled)	day	2.25	176.43	396.97	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	1393.80	4181.39	P&M-075
			Consumables in sinking @ 10 per cent of (b)				418.14	
			c) Overhead charges @ 0.25 on (a+b)				1353.22	
			d) Contractor's profit @ 0.1 on (a+b+c)				676.61	
			Rate per metre = (a+b+c+d)				7442.70	
						say	***7443.00***	
12.12 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.17 m per hour.					
			a) Labour					
			Mate	day	0.30	329.34	98.80	L-12
			Sinker	day	3.00	244.65	733.95	L-15
			Sinking helper (semi-skilled)	day	4.50	176.43	793.94	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	2.00	334.04	668.08	P&M-063
			Consumables in sinking @ 10 per cent of (b)				903.09	
			c) Overhead charges @ 0.25 on (a+b)				2890.16	
			d) Contractor's profit @ 0.1 on (a+b+c)				1445.08	
			Rate per metre = (a+b+c+d)				15895.87	
						say	***15896.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.12 B		(iii)	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if		
			11th m	5%	16691.00	17526.00		
			12th m	5%	17526.00	18402.00		
			13th m	5%	18402.00	19322.00		
			14th m	5%	19322.00	20288.00		
			15th m	5%	20288.00	21302.00		
			16th m	5%	21302.00	22367.00		
			17th m	5%	22367.00	23485.00		
			18th m	5%	23485.00	24659.00		
			19th m	5%	24659.00	25892.00		
			20th m	5%	25892.00	27187.00		
			Total Cost from 10m upto 20m		209934.00	220430.00		
			Avg Rate per metre		***20993.00***	***22043.00***		
12.12 B		(iv)	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering of the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			21st m	7.5%	27834.00	34793.00	36533.00	
			22nd m	7.5%	29922.00	37403.00	39273.00	
			23rd m	7.5%	32166.00	40208.00	42218.00	
			24th m	7.5%	34578.00	43223.00	45384.00	
			25th m	7.5%	37171.00	46464.00	48787.00	
			26th m	7.5%	39959.00	49949.00	52446.00	
			27th m	7.5%	42956.00	53695.00	56380.00	
			28th m	7.5%	46178.00	57723.00	60609.00	
			29th m	7.5%	49641.00	62051.00	65154.00	
			30th m	7.5%	53364.00	66705.00	70040.00	
			Total Cost from 20m upto 30m		393769.00	492214.00	516824.00	
			Avg Rate per metre		***39377.00***	***49221.00***	***51682.00***	
12.12 B		(v)	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(b) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	58700.00	70440.00	73962.00	
			32nd	10%	64570.00	77484.00	81358.00	
			33rd m	10%	71027.00	85232.00	89494.00	
			34th m	10%	78130.00	93756.00	98444.00	
			35th m	10%	85943.00	103132.00	108289.00	
			36th m	10%	94537.00	113444.00	119116.00	
			37th m	10%	103991.00	124789.00	131028.00	
			38th m	10%	114390.00	137268.00	144131.00	
			39th m	10%	125829.00	150995.00	158545.00	
			40th m	10%	138412.00	166094.00	174399.00	
			Total Cost from 30m upto 40m		935529.00	1122634.00	1178766.00	
			Avg Rate per metre		***93553.00***	***112263.00***	***117877.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.12		C	**Soft Rock (6m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in Soft rock strata up to 3m					
			Rate of sinking = 0.25 m per hour.					
			a) Labour					
			Mate	day	0.92	329.34	302.99	L-12
			Sinker (skilled)	day	3.00	244.65	733.95	L-15
			Sinking helper (semi-skilled)	day	20.00	176.43	3528.60	L-14
			Diver	day	0.50	294.05	147.03	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1393.80	5575.19	P&M-075
			Air compressor with pneumatic breakers	hour	3.50	334.04	1169.14	P&M-063
			Consumables in sinking @ 10 per cent of (b)				674.43	
			Add for dewatering @ of 5 per cent of (a+b), if required				606.57	
			c) Overhead charges @ 0.25 on (a+b)				3184.47	
			d) Contractor's profit @ 0.1 on (a+b+c)				1592.24	
			Rate per metre = (a+b+c+d)				17514.60	
						say	***17515.00***	
12.12		D	**Hard Rock (6m dia well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking = 0.17 m per hour.					
			a) Material					
			Gelatine 80 per cent	Kg	4.00	131.73	526.94	M-110
			Electric Detonators	each	18.00	4.61	82.99	M-100/100
			b) Labour					
			Mate	day	1.56	329.34	513.76	L-12
			Driller	day	2.00	294.05	588.10	L-06
			Blaster	day	0.25	352.86	88.22	L-03
			Mazdoor	day	12.00	152.91	1834.87	L-13
			Mazdoor (Skilled)	day	4.00	244.65	978.60	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	334.04	668.08	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				651.72	
			Consumables in sinking @ 10 per cent of cost of (b).				903.09	
			d) Overhead charges @ 0.25 on (a+b+c)				3799.79	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1899.89	
			Rate per metre = (a+b+c+d+e)				20898.83	
						say	***20899.00***	
							20904.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.13	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.**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 7 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.30 m per hour.					
			a) Labour					
			Mate	day	0.15	329.34	49.40	L-12
			Sinker (skilled)	day	1.25	244.65	305.81	L-15
			Sinking helper (semi-skilled)	day	2.50	176.43	441.08	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	3.25	1393.80	4529.84	P&M-075
			Consumables in sinking @10 per cent of (b)				452.98	
			c) Overhead charges @ 0.25 on (a+b)				1444.78	
			d) Contractor's profit @ 0.1 on (a+b+c)				722.39	
			Rate per metre = (a+b+c+d)				7946.28	
						say	***7946.00***	
12.13 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.18	329.34	59.28	L-12
			Sinker	day	1.50	244.65	366.97	L-15
			Sinking helper (semi-skilled)	day	3.00	176.43	529.29	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1393.80	6272.09	P&M-075
			Consumables in sinking @10 per cent of (b)				627.21	
			c) Overhead charges @ 0.25 on (a+b)				1963.71	
			d) Contractor's profit @ 0.1 on (a+b+c)				981.86	
			Rate per metre = (a+b+c+d)				10800.41	
						say	***10800.00***	
12.13 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	11340.00			
			12th m	5%	11907.00			
			13th m	5%	12502.00			
			14th m	5%	13127.00			
			15th m	5%	13783.00			
			16th m	5%	14472.00			
			17th m	5%	15196.00			
			18th m	5%	15956.00			
			19th m	5%	16754.00			
			20th m	5%	17592.00			
			Total Cost from 10m upto 20m		142629.00			
			Avg Rate per metre		***14263.00***			

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.13 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	18911.00	22693.00		
			22nd m	7.5%	20329.00	24395.00		
			23rd m	7.5%	21854.00	26225.00		
			24th m	7.5%	23493.00	28192.00		
			25th m	7.5%	25255.00	30306.00		
			26th m	7.5%	27149.00	32579.00		
			27th m	7.5%	29185.00	35022.00		
			28th m	7.5%	31374.00	37649.00		
			29th m	7.5%	33727.00	40472.00		
			30th m	7.5%	36257.00	43508.00		
			Total Cost from 20m upto 30m		267534.00	321041.00		
			Avg Rate per metre		***26753.00***	***32104.00***		
12.13 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	39883.00	47860.00		
			32nd	10%	43871.00	52645.00		
			33rd m	10%	48258.00	57910.00		
			34th m	10%	53084.00	63701.00		
			35th m	10%	58392.00	70070.00		
			36th m	10%	64231.00	77077.00		
			37th m	10%	70654.00	84785.00		
			38th m	10%	77719.00	93263.00		
			39th m	10%	85491.00	102589.00		
			40th m	10%	94040.00	112848.00		
			Total Cost from 30m upto 40m		635623.00	762748.00		
			Avg Rate per metre		***63562.00***	***76275.00***		
12.13		**B**	**Clayey Soil (7m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 cum					
		(I)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.18	329.34	59.28	L-12
			Sinker (skilled)	day	1.50	244.65	366.97	L-15
			Sinking helper (semi-skilled)	day	3.00	176.43	529.29	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1393.80	6272.09	P&M-075
			Consumables in sinking @ 10 per cent of (b)				627.21	
			d) Overhead charges @ 0.25 on (a+b)				1963.71	
			e) Contractor's profit @ 0.1 on (a+b+c)				981.86	
			Rate per metre = (a+b+c+d)				10800.41	
						say	***10800.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.13 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.17 m per hour.					
			a) Labour					
			Mate	day	0.26	329.34	85.63	L-12
			Sinker	day	2.00	244.65	489.30	L-15
			Sinking helper (semi-skilled)	day	4.00	176.43	705.72	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.25	334.04	1085.63	P&M-063
			Consumables in sinking @ 10 per cent of (b)				944.84	
			c) Overhead charges @ 0.25 on (a+b)				2918.48	
			d) Contractor's profit @ 0.1 on (a+b+c)				1459.24	
			Rate per metre = (a+b+c+d)				16051.62	
						say	***16052.00***	
12.13 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if		
			11th m	5%	16854.00	17697.00		
			12th m	5%	17697.00	18582.00		
			13th m	5%	18582.00	19511.00		
			14th m	5%	19511.00	20487.00		
			15th m	5%	20487.00	21511.00		
			16th m	5%	21511.00	22587.00		
			17th m	5%	22587.00	23716.00		
			18th m	5%	23716.00	24902.00		
			19th m	5%	24902.00	26147.00		
			20th m	5%	26147.00	27454.00		
			Total Cost from 10m upto 20m		211994.00	222594.00		
			Avg Rate per metre		***21199.00***	***22259.00***		
12.13 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	7.5%	28108.00	35135.00	36892.00	
			32nd	7.5%	30216.00	37770.00	39659.00	
			33rd m	7.5%	32482.00	40603.00	42633.00	
			34th m	7.5%	34918.00	43648.00	45830.00	
			35th m	7.5%	37537.00	46921.00	49267.00	
			36th m	7.5%	40352.00	50440.00	52962.00	
			37th m	7.5%	43378.00	54223.00	56934.00	
			38th m	7.5%	46631.00	58289.00	61203.00	
			39th m	7.5%	50128.00	62660.00	65793.00	
			40th m	7.5%	53888.00	67360.00	70728.00	
			Total Cost from 30m upto 40m		397638.00	497049.00	521901.00	
			Avg Rate per metre		***39764.00***	***49705.00***	***52190.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.13 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	59277.00	71132.00	74689.00	
			32nd	10%	65205.00	78246.00	82158.00	
			33rd m	10%	71726.00	86071.00	90375.00	
			34th m	10%	78899.00	94679.00	99413.00	
			35th m	10%	86789.00	104147.00	109354.00	
			36th m	10%	95468.00	114562.00	120290.00	
			37th m	10%	105015.00	126018.00	132319.00	
			38th m	10%	115517.00	138620.00	145551.00	
			39th m	10%	127069.00	152483.00	160107.00	
			40th m	10%	139776.00	167731.00	176118.00	
			Total Cost from 30m upto 40m		944741.00	1133689.00	1190374.00	
			Avg Rate per metre		***94474.00***	***113369.00***	***119037.00***	
12.13		**C**	**Soft Rock (7m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.58	329.34	191.01	L-12
			Sinker (skilled)	day	4.00	244.65	978.60	L-15
			Sinking helper (semi-skilled)	day	10.00	176.43	1764.30	L-14
			Diver	day	0.75	294.05	220.54	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1393.80	6272.09	P&M-075
			Air compressor with pneumatic breakers	hour	3.75	334.04	1252.65	P&M-063
			Consumables in sinking @ 10 per cent of (b)				752.47	
			Add for dewatering @ of 5 per cent of (a+b), if required				533.96	
			c) Overhead charges @ 0.25 on (a+b)				2991.41	
			d) Contractor's profit @ 0.1 on (a+b+c)				1495.70	
			Rate per metre = (a+b+c+d)				16452.73	
						say	***16453.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.13		D	**Hard Rock (7m dia well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in Hard rock strata up to 3 m					
			Rate of sinking = 0.17 m per hour.					
			a) Material					
			Gelatine 80 per cent	Kg	7.00	131.73	922.14	M-110
			Electric Detonators	each	30.00	4.61	138.32	M-100/100
			b) Labour					
			Mate	day	1.60	329.34	526.94	L-12
			Driller	day	2.00	294.05	588.10	L-06
			Blaster	day	0.25	352.86	88.22	L-03
			Mazdoor	day	18.00	152.91	2752.31	L-13
			Mazdoor (Skilled)	day	4.00	244.65	978.60	L-15
			Diver	day	0.50	294.05	147.03	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	334.04	668.08	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				705.60	
			Consumables in sinking @ 10 per cent of cost of (b).				973.65	
			d) Overhead charges @ 0.25 on (a+b+c)				4212.94	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2106.47	
			Rate per metre = (a+b+c+d+e)				23171.17	
						say	***23171.00***	
							23171.00	
12.14	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.**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 8 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.25 m/hour					
			a) Labour					
			Mate	day	0.18	329.34	59.28	L-12
			Sinker (skilled)	day	1.50	244.65	366.97	L-15
			Sinking helper (semi-skilled)	day	3.00	176.43	529.29	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1393.80	5575.19	P&M-075
			Consumables in sinking @10 per cent of (b)				557.52	
			c) Overhead charges @ 0.25 on (a+b)				1772.06	
			d) Contractor's profit @ 0.1 on (a+b+c)				886.03	
			Rate per metre = (a+b+c+d)				9746.35	
						say	***9746.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.14 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.20 m/hour					
			a) Labour					
			Mate	day	0.25	329.34	82.33	L-12
			Sinker	day	1.75	244.65	428.14	L-15
			Sinking helper (semi-skilled)	day	3.50	176.43	617.51	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1393.80	6968.99	P&M-075
			Consumables in sinking @10 per cent of (b)				696.90	
			c) Overhead charges @ 0.25 on (a+b)				2198.46	
			d) Contractor's profit @ 0.1 on (a+b+c)				1099.23	
			Rate per metre = (a+b+c+d)				12091.56	
						say	***12092.00***	
12.14 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	12696.00			
			12th m	5%	13331.00			
			13th m	5%	13998.00			
			14th m	5%	14698.00			
			15th m	5%	15433.00			
			16th m	5%	16205.00			
			17th m	5%	17015.00			
			18th m	5%	17866.00			
			19th m	5%	18759.00			
			20th m	5%	19697.00			
			Total Cost from 10m upto 20m		159698.00			
			Avg Rate per metre		***15970.00***			
12.14 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	21174.00	25409.00		
			22nd m	7.5%	22762.00	27314.00		
			23rd m	7.5%	24469.00	29363.00		
			24th m	7.5%	26304.00	31565.00		
			25th m	7.5%	28277.00	33932.00		
			26th m	7.5%	30398.00	36478.00		
			27th m	7.5%	32678.00	39214.00		
			28th m	7.5%	35129.00	42155.00		
			29th m	7.5%	37764.00	45317.00		
			30th m	7.5%	40596.00	48715.00		
			Total Cost from 20m upto 30m		299551.00	359462.00		
			Avg Rate per metre		***29955.00***	***35946.00***		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.14 A		(v)	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	44656.00	53587.00		
			32nd	10%	49122.00	58946.00		
			33rd m	10%	54034.00	64841.00		
			34th m	10%	59437.00	71324.00		
			35th m	10%	65381.00	78457.00		
			36th m	10%	71919.00	86303.00		
			37th m	10%	79111.00	94933.00		
			38th m	10%	87022.00	104426.00		
			39th m	10%	95724.00	114869.00		
			40th m	10%	105296.00	126355.00		
			Total Cost from 30m upto 40m		711702.00	854042.00		
			Avg Rate per metre		***71170.00***	***85404.00***		
12.14		B	**Clayey Soil (8m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 meter					
		(i)	**Depth from bed level upto 3.0 M**					
			Rate of sinking @ 0.18 m/hour					
			a) Labour					
			Mate	day	0.22	329.34	72.45	L-12
			Sinker (skilled)	day	2.00	244.65	489.30	L-15
			Sinking helper (semi-skilled)	hour	3.50	176.43	617.51	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.		5.50	1393.80	7665.88	P&M-075
			Consumables in sinking @ 10 per cent of (b)				766.59	
			c) Overhead charges @ 0.25 on (a+b)				2402.93	
			d) Contractor's profit @ 0.1 on (a+b+c)				1201.47	
			Rate per metre = (a+b+c+d)				13216.13	
						say	***13216.00***	
12.14 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.17 m/hour					
			a) Labour					
			Mate	day	0.32	329.34	105.39	L-12
			Sinker	day	2.50	244.65	611.62	L-15
			Sinking helper (semi-skilled)	day	4.50	176.43	793.94	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.50	334.04	1169.14	P&M-063
			Consumables in sinking @ 10 per cent of (b)				953.19	
			c) Overhead charges @ 0.25 on (a+b)				2999.02	
			d) Contractor's profit @ 0.1 on (a+b+c)				1499.51	
			Rate per metre = (a+b+c+d)				16494.59	
						say	***16495.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.14 B		(iii)	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if		
			11th m	5%	17319.00	18185.00		
			12th m	5%	18185.00	19094.00		
			13th m	5%	19094.00	20049.00		
			14th m	5%	20049.00	21051.00		
			15th m	5%	21051.00	22104.00		
			16th m	5%	22104.00	23209.00		
			17th m	5%	23209.00	24369.00		
			18th m	5%	24369.00	25587.00		
			19th m	5%	25587.00	26866.00		
			20th m	5%	26866.00	28209.00		
			Total Cost from 10m upto 20m		217833.00	228723.00		
			Avg Rate per metre		***21783.00***	***22872.00***		
12.14 B		(iv)	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	7.5%	28881.00	36101.00	37906.00	
			32nd	7.5%	31047.00	38809.00	40749.00	
			33rd m	7.5%	33376.00	41720.00	43806.00	
			34th m	7.5%	35879.00	44849.00	47091.00	
			35th m	7.5%	38570.00	48213.00	50624.00	
			36th m	7.5%	41463.00	51829.00	54420.00	
			37th m	7.5%	44573.00	55716.00	58502.00	
			38th m	7.5%	47916.00	59895.00	62890.00	
			39th m	7.5%	51510.00	64388.00	67607.00	
			40th m	7.5%	55373.00	69216.00	72677.00	
			Total Cost from 30m upto 40m		408588.00	510736.00	536272.00	
			Avg Rate per metre		***40859.00***	***51074.00***	***53627.00***	
12.14 B		(v)	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	60910.00	73092.00	76747.00	
			32nd	10%	67001.00	80401.00	84421.00	
			33rd m	10%	73701.00	88441.00	92863.00	
			34th m	10%	81071.00	97285.00	102149.00	
			35th m	10%	89178.00	107014.00	112365.00	
			36th m	10%	98096.00	117715.00	123601.00	
			37th m	10%	107906.00	129487.00	135961.00	
			38th m	10%	118697.00	142436.00	149558.00	
			39th m	10%	130567.00	156680.00	164514.00	
			40th m	10%	143624.00	172349.00	180966.00	
			Total Cost from 30m upto 40m		970751.00	1164900.00	1223145.00	
			Avg Rate per metre		***97075.00***	***116490.00***	***122315.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.14		C	**Soft Rock (8m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.20 m/hour					
			a) Labour					
			Mate	day	0.68	329.34	223.95	L-12
			Sinker (skilled)	day	4.00	244.65	978.60	L-15
			Sinking helper (semi-skilled)	day	12.00	176.43	2117.16	L-14
			Diver	day	1.00	294.05	294.05	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1393.80	6968.99	P&M-075
			Air compressor with pneumatic breakers	hour	3.75	334.04	1252.65	P&M-063
			Consumables in sinking @ 10 per cent of (b)				822.16	
			Add for dewatering @ of 5 per cent of (a+b), if required				632.88	
			c) Overhead charges @ 0.25 on (a+b)				3322.61	
			d) Contractor's profit @ 0.1 on (a+b+c)				1661.30	
			Rate per metre = (a+b+c+d)				18274.35	
						say	***18274.00***	
12.14		D	**Hard Rock (8m dia well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking @ 0.17 m/hour					
			a) Material					
			Gelatine 80 per cent	Kg	8.00	131.73	1053.88	M-110
			Electric Detonators	each	32.00	4.61	147.54	M-100/100
			b) Labour					
			Mate	day	1.09	329.34	358.98	L-12
			Driller	day	2.00	294.05	588.10	L-06
			Blaster	day	0.25	352.86	88.22	L-03
			Mazdoor	day	20.00	152.91	3058.12	L-13
			Mazdoor (Skilled)	day	4.00	244.65	978.60	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	334.04	668.08	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				705.14	
			Consumables in sinking @ 10 per cent of cost of (b).				507.20	
			d) Overhead charges @ 0.25 on (a+b+c)				4129.16	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2064.58	
			Rate per metre = (a+b+c+d+e)				22710.37	
						say	***22710.00***	
							22710.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.15	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.**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 9 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.25 m/hour					
			a) Labour					
			Mate	day	0.19	329.34	62.57	L-12
			Sinker (skilled)	day	1.50	244.65	366.97	L-15
			Sinking helper (semi-skilled)	day	3.25	176.43	573.40	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1393.80	5575.19	P&M-075
			Consumables in sinking @10 per cent of (b)				557.52	
			c) Overhead charges @ 0.25 on (a+b)				1783.91	
			d) Contractor's profit @ 0.1 on (a+b+c)				891.96	
			Rate per metre = (a+b+c+d)				9811.52	
						say	***9812.00***	
12.15 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.18 m/hour					
			a) Labour					
			Mate	day	0.27	329.34	88.92	L-12
			Sinker	day	1.75	244.65	428.14	L-15
			Sinking helper (semi-skilled)	day	4.00	176.43	705.72	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	1393.80	7665.88	P&M-075
			Consumables in sinking @10 per cent of (b)				766.59	
			c) Overhead charges @ 0.25 on (a+b)				2413.81	
			d) Contractor's profit @ 0.1 on (a+b+c)				1206.91	
			Rate per metre = (a+b+c+d)				13275.97	
						say	***13276.00***	
12.15 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	13940.00			
			12th m	5%	14637.00			
			13th m	5%	15369.00			
			14th m	5%	16137.00			
			15th m	5%	16944.00			
			16th m	5%	17791.00			
			17th m	5%	18681.00			
			18th m	5%	19615.00			
			19th m	5%	20596.00			
			20th m	5%	21626.00			
			Total Cost from 10m upto 20m		175336.00			
			Avg Rate per metre		***17534.00***			

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.15 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	23247.95	27898.00		
			22nd m	7.5%	24992.00	29990.00		
			23rd m	7.5%	26866.00	32239.00		
			24th m	7.5%	28881.00	34657.00		
			25th m	7.5%	31047.00	37256.00		
			26th m	7.5%	33376.00	40051.00		
			27th m	7.5%	35879.00	43055.00		
			28th m	7.5%	38570.00	46284.00		
			29th m	7.5%	41463.00	49756.00		
			30th m	7.5%	44573.00	53488.00		
			Total Cost from 20m upto 30m		328894.95	394674.00		
			Avg Rate per metre		***32889.00***	***39467.00***		
12.15 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	49030.30	58836.00		
			32nd	10%	53933.00	64720.00		
			33rd m	10%	59326.00	71191.00		
			34th m	10%	65259.00	78311.00		
			35th m	10%	71785.00	86142.00		
			36th m	10%	78964.00	94757.00		
			37th m	10%	86860.00	104232.00		
			38th m	10%	95546.00	114655.00		
			39th m	10%	105101.00	126121.00		
			40th m	10%	115611.00	138733.00		
			Total Cost from 30m upto 40m		781415.30	937698.00		
			Avg Rate per metre		***78142.00***	***93770.00***		
12.15		**B**	**Clayey Soil (9m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 cum					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking 0.17 m / hour					
			a) Labour					
			Mate	day	0.24	329.34	79.04	L-12
			Sinker (skilled)	day	2.25	244.65	550.46	L-15
			Sinking helper (semi-skilled)	day	3.75	176.43	661.61	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	1393.80	8014.33	P&M-075
			Consumables in sinking @ 10 per cent of (b)				801.43	
			c) Overhead charges @ 0.25 on (a+b)				2526.72	
			d) Contractor's profit @ 0.1 on (a+b+c)				1263.36	
			Rate per metre = (a+b+c+d)				13896.96	
						say	***13897.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.15 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.15 m / hour					
			a) Labour					
			Mate	day	0.34	329.34	111.97	L-12
			Sinker	day	2.50	244.65	611.62	L-15
			Sinking helper (semi-skilled)	day	5.00	176.43	882.15	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1393.80	9059.68	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.75	334.04	1252.65	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1031.23	
			c) Overhead charges @ 0.25 on (a+b)				3237.33	
			d) Contractor's profit @ 0.1 on (a+b+c)				1618.66	
			Rate per metre = (a+b+c+d)				17805.31	
						say	***17805.00***	
12.15 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if		
			11th m	5%	18695.00	19630.00		
			12th m	5%	19630.00	20612.00		
			13th m	5%	20612.00	21643.00		
			14th m	5%	21643.00	22725.00		
			15th m	5%	22725.00	23861.00		
			16th m	5%	23861.00	25054.00		
			17th m	5%	25054.00	26307.00		
			18th m	5%	26307.00	27622.00		
			19th m	5%	27622.00	29003.00		
			20th m	5%	29003.00	30453.00		
			Total Cost from 10m upto 20m		235152.00	246910.00		
			Avg Rate per metre		***23515.00***	***24691.00***		
12.15 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	7.5%	31178.00	38973.00	40922.00	
			32nd	7.5%	33516.00	41895.00	43990.00	
			33rd m	7.5%	36030.00	45038.00	47290.00	
			34th m	7.5%	38732.00	48415.00	50836.00	
			35th m	7.5%	41637.00	52046.00	54648.00	
			36th m	7.5%	44760.00	55950.00	58748.00	
			37th m	7.5%	48117.00	60146.00	63153.00	
			38th m	7.5%	51726.00	64658.00	67891.00	
			39th m	7.5%	55605.00	69506.00	72981.00	
			40th m	7.5%	59775.00	74719.00	78455.00	
			Total Cost from 30m upto 40m		441076.00	551346.00	578914.00	
			Avg Rate per metre		***44108.00***	***55135.00***	***57891.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.15 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	65753.00	78904.00	82849.00	
			32nd	10%	72328.00	86794.00	91134.00	
			33rd m	10%	79561.00	95473.00	100247.00	
			34th m	10%	87517.00	105020.00	110271.00	
			35th m	10%	96269.00	115523.00	121299.00	
			36th m	10%	105896.00	127075.00	133429.00	
			37th m	10%	116486.00	139783.00	146772.00	
			38th m	10%	128135.00	153762.00	161450.00	
			39th m	10%	140949.00	169139.00	177596.00	
			40th m	10%	155044.00	186053.00	195356.00	
			Total Cost from 30m upto 40m		1047938.00	1257526.00	1320403.00	
			Avg Rate per metre		***104794.00***	***125753.00***	***132040.00***	
12.15		**C**	**Soft Rock (9m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata up to 3m					
			Rate of sinking 0.15 m / hour					
			a) Labour					
			Mate	day	0.76	329.34	250.30	L-12
			Sinker (skilled)	day	4.00	244.65	978.60	L-15
			Sinking helper (semi-skilled)	day	14.00	176.43	2470.02	L-14
			Diver	day	1.20	294.05	352.86	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1393.80	9059.68	P&M-075
			Air compressor with pneumatic breakers	hour	4.00	334.04	1336.16	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1039.58	
			Add for dewatering @ of 5 per cent of (a+b), if required				1548.72	
			c) Overhead charges @ 0.25 on (a+b)				4258.98	
			d) Contractor's profit @ 0.1 on (a+b+c)				2129.49	
			Rate per metre = (a+b+c+d)				23424.39	
						say	***23424.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.15		D	**Hard Rock (9m dia well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking 0.15 m / hour					
			a) Material					
			Gelatine 80 per cent	Kg	10.00	131.73	1317.34	M-110
			Electric Detonators	each	40.00	4.61	184.43	M-100/100
			b) Labour					
			Mate	day	1.17	329.34	385.32	L-12
			Driller	day	2.00	294.05	588.10	L-06
			Blaster	day	0.25	352.86	88.22	L-03
			Mazdoor	day	22.00	152.91	3363.93	L-13
			Mazdoor (Skilled)	day	4.00	244.65	978.60	L-15
			Diver	day	1.00	294.05	294.05	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	1393.80	9756.58	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.50	334.04	835.10	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				814.49	
			Consumables in sinking @ 10 per cent of cost of (b).				569.82	
			d) Overhead charges @ 0.25 on (a+b+c)				4794.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2397.00	
			Rate per metre = (a+b+c+d+e)				26366.98	
						say	***26367.00***	
							26367.00	
12.16	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.**					
			Unit = Running Meter					
			Taking output = 1 m					
			Diameter of well - 10 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking 0.20 m / hour					
			a) Labour					
			Mate	day	0.20	329.34	65.87	L-12
			Sinker (skilled)	day	1.50	244.65	366.97	L-15
			Sinking helper (semi-skilled)	day	3.50	176.43	617.51	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1393.80	6968.99	P&M-075
			Consumables in sinking @10 per cent of (b)				696.90	
			c) Overhead charges @ 0.25 on (a+b)				2179.06	
			d) Contractor's profit @ 0.1 on (a+b+c)				1089.53	
			Rate per metre = (a+b+c+d)				11984.82	
						say	***11985.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.16 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.17 m / hour					
			a) Labour					
			Mate	day	0.31	329.34	102.09	L-12
			Sinker	day	2.00	244.65	489.30	L-15
			Sinking helper (semi-skilled)	day	4.25	176.43	749.83	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	1393.80	8014.33	P&M-075
			Consumables in sinking @10 per cent of (b)				801.43	
			c) Overhead charges @ 0.25 on (a+b)				2539.25	
			d) Contractor's profit @ 0.1 on (a+b+c)				1269.62	
			Rate per metre = (a+b+c+d)				13965.86	
						say	***13966.00***	
12.16 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	14664.00			
			12th m	5%	15397.00			
			13th m	5%	16167.00			
			14th m	5%	16975.00			
			15th m	5%	17824.00			
			16th m	5%	18715.00			
			17th m	5%	19651.00			
			18th m	5%	20634.00			
			19th m	5%	21666.00			
			20th m	5%	22749.00			
			Total Cost from 10m upto 20m		184442.00			
			Avg Rate per metre		***18444.00***			
12.16 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	24455.00	29346.00		
			22nd m	7.5%	26289.00	31547.00		
			23rd m	7.5%	28261.00	33913.00		
			24th m	7.5%	30381.00	36457.00		
			25th m	7.5%	32660.00	39192.00		
			26th m	7.5%	35110.00	42132.00		
			27th m	7.5%	37743.00	45292.00		
			28th m	7.5%	40574.00	48689.00		
			29th m	7.5%	43617.00	52340.00		
			30th m	7.5%	46888.00	56266.00		
			Total Cost from 20m upto 30m		345978.00	415174.00		
			Avg Rate per metre		***34598.00***	***41517.00***		

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.16 A		(v)	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	51577.00	61892.00		
			32nd	10%	56735.00	68082.00		
			33rd m	10%	62409.00	74891.00		
			34th m	10%	68650.00	82380.00		
			35th m	10%	75515.00	90618.00		
			36th m	10%	83067.00	99680.00		
			37th m	10%	91374.00	109649.00		
			38th m	10%	100511.00	120613.00		
			39th m	10%	110562.00	132674.00		
			40th m	10%	121618.00	145942.00		
			Total Cost from 30m upto 40m		822018.00	986421.00		
			Avg Rate per metre		***82202.00***	***98642.00***		
12.16		B	**Clayey Soil (10m dia. Well)**					
			Unit = Running Meter					
			Taking output = 1 cum					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking 0.18m/hour.					
			a) Labour					
			Mate	day	0.25	329.34	82.33	L-12
			Sinker (skilled)	day	2.50	244.65	611.62	L-15
			Sinking helper (semi-skilled)	day	5.50	176.43	970.37	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Consumables in sinking @ 10 per cent of (b)				836.28	
			c) Overhead charges @ 0.25 on (a+b)				2715.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				1357.92	
			Rate per metre = (a+b+c+d)				14937.15	
						say	***14937.00***	
12.16 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.15m/hour.					
			a) Labour					
			Mate	day	0.40	329.34	131.73	L-12
			Sinker	day	3.00	244.65	733.95	L-15
			Sinking helper (semi-skilled)	day	5.50	176.43	970.37	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.00	334.04	1336.16	P&M-063
			Consumables in sinking @ 10 per cent of (b)				969.89	
			c) Overhead charges @ 0.25 on (a+b)				3126.22	
			d) Contractor's profit @ 0.1 on (a+b+c)				1563.11	
			Rate per metre = (a+b+c+d)				17194.22	
						say	***17194.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.16 B		(iii)	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if		
			11th m	5%	18054.00	18957.00		
			12th m	5%	18957.00	19905.00		
			13th m	5%	19905.00	20900.00		
			14th m	5%	20900.00	21945.00		
			15th m	5%	21945.00	23042.00		
			16th m	5%	23042.00	24194.00		
			17th m	5%	24194.00	25404.00		
			18th m	5%	25404.00	26674.00		
			19th m	5%	26674.00	28008.00		
			20th m	5%	28008.00	29408.00		
			Total Cost from 10m upto 20m		227083.00	238437.00		
			Avg Rate per metre		***22708.00***	***23844.00***		
12.16 B		(iv)	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	7.5%	30109.00	37636.00	39518.00	
			32nd	7.5%	32367.00	40459.00	42482.00	
			33rd m	7.5%	34795.00	43494.00	45669.00	
			34th m	7.5%	37405.00	46756.00	49094.00	
			35th m	7.5%	40210.00	50263.00	52776.00	
			36th m	7.5%	43226.00	54033.00	56735.00	
			37th m	7.5%	46468.00	58085.00	60989.00	
			38th m	7.5%	49953.00	62441.00	65563.00	
			39th m	7.5%	53699.00	67124.00	70480.00	
			40th m	7.5%	57726.00	72158.00	75766.00	
			Total Cost from 30m upto 40m		425958.00	532449.00	559072.00	
			Avg Rate per metre		***42596.00***	***53245.00***	***55907.00***	
12.16 B		(v)	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	63499.00	76199.00	80009.00	
			32nd	10%	69849.00	83819.00	88010.00	
			33rd m	10%	76834.00	92201.00	96811.05	
			34th m	10%	84517.00	101420.00	106491.00	
			35th m	10%	92969.00	111563.00	117141.15	
			36th m	10%	102266.00	122719.00	128854.95	
			37th m	10%	112493.00	134992.00	141741.60	
			38th m	10%	123742.00	148490.00	155914.50	
			39th m	10%	136116.00	163339.00	171505.95	
			40th m	10%	149728.00	179674.00	188657.70	
			Total Cost from 30m upto 40m		1012013.00	1214416.00	1275136.90	
			Avg Rate per metre		***101201.00***	***121442.00***	***127514.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.16		C	**Soft Rock (10m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking 0.14m/hour.					
			a) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Sinker (skilled)	day	4.00	244.65	978.60	L-15
			Sinking helper (semi-skilled)	day	16.00	176.43	2822.88	L-14
			Diver	day	1.40	294.05	411.67	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	1393.80	9756.58	P&M-075
			Air compressor with pneumatic breakers	hour	4.25	334.04	1419.67	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1117.63	
			Add for dewatering @ 5 per cent of cost, if required				614.69	
			c) Overhead charges @ 0.25 on (a+b)				4351.24	
			d) Contractor's profit @ 0.1 on (a+b+c)				2175.62	
			Rate per metre = (a+b+c+d)				23931.80	
						say	***23932.00***	
12.16		D	**Hard Rock (10m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking 0.12 m/ hour.					
			a) Material					
			Gelatine 80 per cent	Kg	11.00	131.73	1449.08	M-110
			Electric Detonators	each.	44.00	4.61	202.87	M-100/100
			b) Labour					
			Mate	day	1.27	329.34	418.26	L-12
			Driller	day	2.00	294.05	588.10	L-06
			Blaster	day	0.25	352.86	88.22	L-03
			Mazdoor	day	24.00	152.91	3669.74	L-13
			Mazdoor (Skilled)	day	4.00	244.65	978.60	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.50	1393.80	11847.27	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	334.04	1002.12	P&M-063
			Dewatering @ 5 per cent of cost (c), if required.				642.47	
			Consumables in sinking @ 10 per cent of cost of (b+c).				1923.48	
			d) Overhead charges @ 0.25 on (a+b+c)				5702.55	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2851.28	
			Rate per metre = (a+b+c+d+e)				31364.04	
						say	***31364.00***	
							31364.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.17	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.**					
			Unit = Running Meter					
			Taking output = 0.50 m					
			Diameter of well - 11 m.					
		A	**Sandy Soil**					
		(i)	**Depth from bed level upto 3.0 M**					
			Rate of sinking @ 0.15 m/hour					
			a) Labour					
			Mate	day	0.21	329.34	69.16	L-12
			Sinker (skilled)	day	1.50	244.65	366.97	L-15
			Sinking helper (semi-skilled)	day	3.30	176.43	582.22	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Consumables in sinking @10 per cent of (b)				836.28	
			d) Overhead charges @ 0.25 on (a+b+c)				2554.35	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1277.18	
			Cost for 0.5m = a+b+c+d				14048.94	
			Rate per metre = (a+b+c+d)/0.50				28097.89	
						say	***28098.00***	
12.17 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.13 m/hour					
			a) Labour					
			Mate	day	0.32	329.34	105.39	L-12
			Sinker	day	2.00	244.65	489.30	L-15
			Sinking helper (semi-skilled)	day	4.50	176.43	793.94	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1393.80	5575.19	P&M-075
			Consumables in sinking @10 per cent of (b)				557.52	
			c) Overhead charges @ 0.25 on (a+b+c)				1880.33	
			d) Contractor's profit @ 0.1 on (a+b+c+d)				940.17	
			Cost for 0.5m = a+b+c+d				10341.83	
			Rate per metre = (a+b+c+d)/0.50				20683.65	
						say	***20684.00***	
12.17 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	21718.00			
			12th m	5%	22804.00			
			13th m	5%	23944.00			
			14th m	5%	25141.00			
			15th m	5%	26398.00			
			16th m	5%	27718.00			
			17th m	5%	29104.00			
			18th m	5%	30559.00			
			19th m	5%	32087.00			
			20th m	5%	33691.00			
			Total Cost from 10m upto 20m		273164.00			
			Avg Rate per metre		***27316.00***			

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.17 A		(iv)	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	36218.00	43462.00		
			22nd m	7.5%	38934.00	46721.00		
			23rd m	7.5%	41854.00	50225.00		
			24th m	7.5%	44993.00	53992.00		
			25th m	7.5%	48367.00	58040.00		
			26th m	7.5%	51995.00	62394.00		
			27th m	7.5%	55895.00	67074.00		
			28th m	7.5%	60087.00	72104.00		
			29th m	7.5%	64594.00	77513.00		
			30th m	7.5%	69439.00	83327.00		
			Total Cost from 20m upto 30m		512376.00	614852.00		
			Avg Rate per metre		***51238.00***	***61485.00***		
12.17 A		(v)	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	76383.00	91660.00		
			32nd	10%	84021.00	100825.00		
			33rd m	10%	92423.00	110908.00		
			34th m	10%	101665.00	121998.00		
			35th m	10%	111832.00	134198.00		
			36th m	10%	123015.00	147618.00		
			37th m	10%	135317.00	162380.00		
			38th m	10%	148849.00	178619.00		
			39th m	10%	163734.00	196481.00		
			40th m	10%	180107.00	216128.00		
			Total Cost from 30m upto 40m		1217346.00	1460815.00		
			Avg Rate per metre		***121735.00***	***146082.00***		
12.17		B	**Clayey Soil (11 m dia. Well)**					
			Unit = Running Meter					
			Taking output = 0.50 meter					
		(i)	**Depth from bed level upto 3.0 M**					
			Rate of sinking @ 0.10 m/hour					
			a) Labour					
			Mate	day	0.26	329.34	85.63	L-12
			Sinker (skilled)	day	2.50	244.65	611.62	L-15
			Sinking helper (semi-skilled)	day	4.00	176.43	705.72	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1393.80	6968.99	P&M-075
			Consumables in sinking @ 10 per cent of (b)				696.90	
			c) Overhead charges @ 0.25 on (a+b)				2267.21	
			d) Contractor's profit @ 0.1 on (a+b+c)				1133.61	
			Cost for 0.5m = a+b+c+d				12469.68	
			Rate per metre = (a+b+c+d)/0.50				24939.35	
						say	***24939.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.17 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.08 m/hour					
			a) Labour					
			Mate	day	0.43	329.34	141.61	L-12
			Sinker	day	3.50	244.65	856.27	L-15
			Sinking helper (semi-skilled)	day	5.75	176.43	1014.47	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.25	334.04	1419.67	P&M-063
			Consumables in sinking @ 10 per cent of (b)				978.25	
			c) Overhead charges @ 0.25 on (a+b)				3193.27	
			d) Contractor's profit @ 0.1 on (a+b+c)				1596.63	
			Cost for 0.5m = a+b+c+d				17562.96	
			Rate per metre = (a+b+c+d)/0.50				35125.92	
						say	***35126.00***	
12.17 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if		
			11th m	5%	36882.00	38726.00		
			12th m	5%	38726.00	40662.00		
			13th m	5%	40662.00	42695.00		
			14th m	5%	42695.00	44830.00		
			15th m	5%	44830.00	47072.00		
			16th m	5%	47072.00	49426.00		
			17th m	5%	49426.00	51897.00		
			18th m	5%	51897.00	54492.00		
			19th m	5%	54492.00	57217.00		
			20th m	5%	57217.00	60078.00		
			Total Cost from 10m upto 20m		463899.00	487094.00		
			Avg Rate per metre		***46390.00***	***48709.00***		
12.17 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	61508.00	76885.00	80729.00	
			22nd	7.5%	66121.00	82651.00	86784.00	
			23rd m	7.5%	71080.00	88850.00	93293.00	
			24th m	7.5%	76411.00	95514.00	100290.00	
			25th m	7.5%	82142.00	102678.00	107812.00	
			26th m	7.5%	88303.00	110379.00	115898.00	
			27th m	7.5%	94926.00	118658.00	124591.00	
			28th m	7.5%	102045.00	127556.00	133934.00	
			29th m	7.5%	109698.00	137123.00	143979.00	
			30th m	7.5%	117925.00	147406.00	154776.00	
			Total Cost from 20m upto 30m		870159.00	1087700.00	1142085.00	
			Avg Rate per metre		***87016.00***	***108770.00***	***114209.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.17 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	129718.00	155662.00	163445.00	
			32nd	10%	142690.00	171228.00	179789.00	
			33rd m	10%	156959.00	188351.00	197769.00	
			34th m	10%	172655.00	207186.00	217545.00	
			35th m	10%	189921.00	227905.00	239300.00	
			36th m	10%	208913.00	250696.00	263231.00	
			37th m	10%	229804.00	275765.00	289553.00	
			38th m	10%	252784.00	303341.00	318508.00	
			39th m	10%	278062.00	333674.00	350358.00	
			40th m	10%	305868.00	367042.00	385394.00	
			Total Cost from 30m upto 40m		2067374	2480850	2604892	
			Avg Rate per metre		***206737.00***	***248085.00***	***260489.00***	
12.17		**C**	**Soft Rock (11m dia well)**					
			Unit = Running Meter.					
			Taking output = 0.50 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.06 m/hour					
			a) Labour					
			Mate	day	0.95	329.34	312.87	L-12
			Sinker (skilled)	day	4.25	244.65	1039.76	L-15
			Sinking helper (semi-skilled)	day	18.00	176.43	3175.74	L-14
			Diver	day	1.50	294.05	441.08	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.00	1393.80	11150.38	P&M-075
			Air compressor with pneumatic breakers	hour	4.50	334.04	1503.18	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1265.36	
			Add for dewatering @ 5 per cent of cost of (b), if required				695.95	
			c) Overhead charges @ 0.25 on (a+b)				4896.08	
			d) Contractor's profit @ 0.1 on (a+b+c)				2448.04	
			Cost for 0.5m = a+b+c+d				26928.42	
			Rate per metre = (a+b+c+d)/0.50				53856.84	
						say	***53857.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.17		D	**Hard Rock (11m dia well)**					
			Unit = Running Meter.					
			Taking output = 0.50 m					
			Depth in hard rock upto 3 m					
			Rate of sinking @ 0.05 m/hour					
			a) Material					
			Gelatine 80 per cent	Kg	12.00	131.73	1580.81	M-110
			Electric Detonators	each.	48.00	4.61	221.31	M-100/100
			b) Labour					
			Mate	day	1.35	329.34	444.60	L-12
			Driller	day	2.00	294.05	588.10	L-06
			Blaster	day	0.25	352.86	88.22	L-03
			Mazdoor	day	26.00	152.91	3975.56	L-13
			Mazdoor (Skilled)	day	4.00	244.65	978.60	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1393.80	13937.97	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.50	334.04	1169.14	P&M-063
			Dewatering @ 5 per cent of cost (c), if required.				755.36	
			Consumables in sinking @ 10 per cent of cost of (b+c).				2118.22	
			d) Overhead charges @ 0.25 on (a+b+c)				6464.47	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3232.24	
			Cost for 0.5m = a+b+c+d				35554.59	
			Rate per metre = (a+b+c+d)/0.50				71109.19	
						say	***71109.00***	
							71109.00	
12.18	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.**					
			Unit = Running Meter					
			Taking output = 0.25 m					
			Diameter of well - 12 m.					
		A	**Sandy Soil**					
		(i)	**I) Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.05 m/hour					
			a) Labour					
			Mate	day	0.22	329.34	72.45	L-12
			Sinker (skilled)	day	1.75	244.65	428.14	L-15
			Sinking helper (semi-skilled)	day	4.00	176.43	705.72	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1393.80	8362.78	P&M-075
			Consumables in sinking @10 per cent of (b)				836.28	
			c) Overhead charges @ 0.25 on (a+b)				2601.34	
			d) Contractor's profit @ 0.1 on (a+b+c)				1300.67	
			Cost for 0.25m = a+b+c+d				14307.39	
			Rate per metre = (a+b+c+d)/0.25				57229.54	
						say	***57230.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.18 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.038 m/hour					
			a) Labour					
			Mate	day	0.37	329.34	121.85	L-12
			Sinker	day	2.50	244.65	611.62	L-15
			Sinking helper (semi-skilled)	day	4.75	176.43	838.04	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1393.80	9059.68	P&M-075
			Consumables in sinking @10 per cent of (b)				905.97	
			c) Overhead charges @ 0.25 on (a+b)				2884.29	
			d) Contractor's profit @ 0.1 on (a+b+c)				1442.15	
			Cost for 0.25m = a+b+c+d				15863.61	
			Rate per metre = (a+b+c+d)/0.25				63454.43	
						say	***63454.00***	
12.18 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	66627.00			
			12th m	5%	69958.00			
			13th m	5%	73456.00			
			14th m	5%	77129.00			
			15th m	5%	80985.00			
			16th m	5%	85034.00			
			17th m	5%	89286.00			
			18th m	5%	93750.00			
			19th m	5%	98438.00			
			20th m	5%	103360.00			
			Total Cost from 10m upto 20m		838023.00			
			Avg Rate per metre		***83802.00***			
12.18 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	111112.00	133334.00		
			22nd m	7.5%	119445.00	143334.00		
			23rd m	7.5%	128403.00	154084.00		
			24th m	7.5%	138033.00	165640.00		
			25th m	7.5%	148385.00	178062.00		
			26th m	7.5%	159514.00	191417.00		
			27th m	7.5%	171478.00	205774.00		
			28th m	7.5%	184339.00	221207.00		
			29th m	7.5%	198164.00	237797.00		
			30th m	7.5%	213026.00	255631.00		
			Total Cost from 20m upto 30m		1571899.00	1886280.00		
			Avg Rate per metre		***157190.00***	***188628.00***		

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.18 A		(v)	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	234329.00	281195.00		
			32nd	10%	257762.00	309314.00		
			33rd m	10%	283538.00	340246.00		
			34th m	10%	311892.00	374270.00		
			35th m	10%	343081.00	411697.00		
			36th m	10%	377389.00	452867.00		
			37th m	10%	415128.00	498154.00		
			38th m	10%	456641.00	547969.00		
			39th m	10%	502305.00	602766.00		
			40th m	10%	552536.00	663043.00		
			Total Cost from 30m upto 40m		3734601	4481521		
			Avg Rate per metre		***373460.00***	***448152.00***		
12.18		B	**Clayey Soil (12 m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 0.25 meter.					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.04 m/hour					
			a) Labour					
			Mate	day	0.30	329.34	98.80	L-12
			Sinker (skilled)	day	3.00	244.65	733.95	L-15
			Sinking helper (semi-skilled)	day	4.50	176.43	793.94	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	1393.80	8711.23	P&M-075
			Consumables in sinking @ 10 per cent of (b)				871.12	
			c) Overhead charges @ 0.25 on (a+b)				2802.26	
			d) Contractor's profit @ 0.1 on (a+b+c)				1401.13	
			Cost for 0.25m = a+b+c+d				15412.43	
			Rate per metre = (a+b+c+d)/0.25				61649.71	
						say	***61650.00***	
12.18 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.03 m/hour					
			a) Labour					
			Mate	day	0.48	329.34	158.08	L-12
			Sinker	day	3.75	244.65	917.44	L-15
			Sinking helper (semi-skilled)	day	6.00	176.43	1058.58	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	1393.80	11610.33	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	334.04	1503.18	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1311.35	
			c) Overhead charges @ 0.25 on (a+b)				4139.74	
			d) Contractor's profit @ 0.1 on (a+b+c)				2069.87	
			Cost for 0.25m = a+b+c+d				22768.57	
			Rate per metre = (a+b+c+d)/0.25				91074.29	
						say	***91074.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.18 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if		
			11th m	5%	95628.00	100409.00		
			12th m	5%	100409.00	105429.00		
			13th m	5%	105429.00	110700.00		
			14th m	5%	110700.00	116235.00		
			15th m	5%	116235.00	122047.00		
			16th m	5%	122047.00	128149.00		
			17th m	5%	128149.00	134556.00		
			18th m	5%	134556.00	141284.00		
			19th m	5%	141284.00	148348.00		
			20th m	5%	148348.00	155765.00		
			Total Cost from 10m upto 20m		1202785.00	1262922.00		
			Avg Rate per metre		***120279.00***	***126292.00***		
12.18 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	159474.00	199343.00	209310.00	
			22nd	7.5%	171435.00	214294.00	225009.00	
			23rd m	7.5%	184293.00	230366.00	241884.00	
			24th m	7.5%	198115.00	247644.00	260026.00	
			25th m	7.5%	212974.00	266218.00	279529.00	
			26th m	7.5%	228947.00	286184.00	300493.00	
			27th m	7.5%	246118.00	307648.00	323030.00	
			28th m	7.5%	264577.00	330721.00	347257.00	
			29th m	7.5%	284420.00	355525.00	373301.00	
			30th m	7.5%	305752.00	382190.00	401300.00	
			Total Cost from 20m upto 30m		2256105	2820133	2961139	
			Avg Rate per metre		***225611.00***	***282013.00***	***296114.00***	
12.18 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	336327.00	403592.00	423772.00	
			32nd	10%	369960.00	443952.00	466150.00	
			33rd m	10%	406956.00	488347.00	512764.00	
			34th m	10%	447652.00	537182.00	564041.00	
			35th m	10%	492417.00	590900.00	620445.00	
			36th m	10%	541659.00	649991.00	682491.00	
			37th m	10%	595825.00	714990.00	750740.00	
			38th m	10%	655408.00	786490.00	825815.00	
			39th m	10%	720949.00	865139.00	908396.00	
			40th m	10%	793044.00	951653.00	999236.00	
			Total Cost from 30m upto 40m		5360197	6432236	6753850	
			Avg Rate per metre		***536020.00***	***643224.00***	***675385.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.18		**C**	**Soft Rock (12m dia well)**					
			Unit = Running Meter					
			Taking output = 0.25 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.025 m/hour					
			a) Labour					
			Mate	day	1.06	329.34	349.10	L-12
			Sinker (skilled)	day	4.50	244.65	1100.92	L-15
			Sinking helper (semi-skilled)	day	20.00	176.43	3528.60	L-14
			Diver	day	1.75	294.05	514.59	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1393.80	13937.97	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.75	334.04	1586.69	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1552.47	
			Add for dewatering @ 5 per cent, if required				853.86	
			c) Overhead charges @ 0.25 on (a+b)				5856.05	
			d) Contractor's profit @ 0.1 on (a+b+c)				2928.02	
			Cost for 0.25m = a+b+c+d				32208.27	
			Rate per metre = (a+b+c+d)/0.25				128833.06	
						say	***128833.00***	
12.18		**D**	**Hard Rock (12m dia well)**					
			Unit = Running Meter					
			Taking output = 0.25 m					
		(i)	**Depth in hard rock strata upto 3 m**					
			Rate of sinking @ 0.020 m/hour					
			a) Material					
			Gelatine80 per cent	Kg	14.00	131.73	1844.28	M-110
			Electric detonator	each.	56.00	4.61	258.20	M-100/100
			b) Labour					
			Mate	day	1.44	329.34	474.24	L-12
			Driller	day	2.00	294.05	588.10	L-06
			Blaster	day	0.25	352.86	88.22	L-03
			Mazdoor	day	28.00	152.91	4281.37	L-13
			Mazdoor (Skilled)	day	4.50	244.65	1100.92	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	12.50	1393.80	17422.46	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	4.00	334.04	1336.16	P&M-063
			Dewatering @ 5 per cent, if required.				937.93	
			Consumables in sinking @ 10 per cent of (c).				1969.66	
			d) Overhead charges @ 0.25 on (a+b+c)				7575.39	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3787.69	
			Cost for 0.25m = a+b+c+d+e				41664.62	
			Rate per metre = (a+b+c+d+e)/0.25				166658.49	
						say	***166658.00***	
							166658.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.19	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.**					
			Unit = Running Meter					
			Taking output = 1 m					
			Dimensions of well.					
			Overall length = 12 m					
			Overall width = 6 m					
		A	**Sandy Soil**					
		(i)	**Depth from bed level upto 3.0 M**					
			Rate of sinking @ 0.18 m/hour					
			a) Labour					
			Mate	day	0.20	329.34	65.87	L-12
			Sinker (skilled)	day	1.25	244.65	305.81	L-15
			Sinking helper (semi-skilled)	day	3.75	176.43	661.61	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	1393.80	7665.88	P&M-075
			Consumables in sinking @10 per cent of (b)				766.59	
			c) Overhead charges @ 0.25 on (a+b)				2366.44	
			d) Contractor's profit @ 0.1 on (a+b+c)				1183.22	
			Rate per metre = (a+b+c+d)				13015.42	
						say	***13015.00***	
12.19 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.17 m/hour					
			a) Labour					
			Mate	day	0.30	329.34	98.80	L-12
			Sinker	day	1.50	244.65	366.97	L-15
			Sinking helper (semi-skilled)	day	4.00	176.43	705.72	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.88	1393.80	8195.53	P&M-075
			Consumables in sinking @10 per cent of (b)				819.55	
			c) Overhead charges @ 0.25 on (a+b)				2546.64	
			d) Contractor's profit @ 0.1 on (a+b+c)				1273.32	
			Rate per metre = (a+b+c+d)				14006.54	
						say	***14007.00***	
12.19 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	14707.00			
			12th m	5%	15442.00			
			13th m	5%	16214.00			
			14th m	5%	17025.00			
			15th m	5%	17876.00			
			16th m	5%	18770.00			
			17th m	5%	19709.00			
			18th m	5%	20694.00			
			19th m	5%	21729.00			
			20th m	5%	22815.00			
			Total Cost from 10m upto 20m		184981.00			
			Avg Rate per metre		***18498.00***			

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.19 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	24526.00	29431.00		
			22nd m	7.5%	26365.00	31638.00		
			23rd m	7.5%	28342.00	34010.00		
			24th m	7.5%	30468.00	36562.00		
			25th m	7.5%	32753.00	39304.00		
			26th m	7.5%	35209.00	42251.00		
			27th m	7.5%	37850.00	45420.00		
			28th m	7.5%	40689.00	48827.00		
			29th m	7.5%	43741.00	52489.00		
			30th m	7.5%	47022.00	56426.00		
			Total Cost from 20m upto 30m		346965.00	416358.00		
			Avg Rate per metre		***34697.00***	***41636.00***		
12.19 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	51724.00	62069.00		
			32nd	10%	56896.00	68275.00		
			33rd m	10%	62586.00	75103.00		
			34th m	10%	68845.00	82614.00		
			35th m	10%	75730.00	90876.00		
			36th m	10%	83303.00	99964.00		
			37th m	10%	91633.00	109960.00		
			38th m	10%	100796.00	120955.00		
			39th m	10%	110876.00	133051.00		
			40th m	10%	121964.00	146357.00		
			Total Cost from 30m upto 40m		824353.00	989224.00		
			Avg Rate per metre		***82435.00***	***98922.00***		
12.19		**B**	**Clayey Soil (Twin D Type Well)**					
			Unit = Running Meter					
			Taking output = 1 meter					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.16 m/hour					
			a) Labour					
			Mate	day	0.26	329.34	85.63	L-12
			Sinker (skilled)	day	2.50	244.65	611.62	L-15
			Sinking helper (semi-skilled)	day	4.00	176.43	705.72	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	1393.80	8711.23	P&M-075
			Consumables in sinking @ 10 per cent of (b)				871.12	
			c) Overhead charges @ 0.25 on (a+b)				2746.33	
			d) Contractor's profit @ 0.1 on (a+b+c)				1373.17	
			Rate per metre = (a+b+c+d)				15104.82	
						say	***15105.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.19 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.15 m/hour					
			a) Labour					
			Mate	day	0.45	329.34	148.20	L-12
			Sinker	day	3.25	244.65	795.11	L-15
			Sinking helper (semi-skilled)	day	6.00	176.43	1058.58	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.67	1393.80	9296.63	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	334.04	1503.18	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1079.98	
			c) Overhead charges @ 0.25 on (a+b)				3470.42	
			d) Contractor's profit @ 0.1 on (a+b+c)				1735.21	
			Rate per metre = (a+b+c+d)				19087.31	
						say	***19087.00***	
12.19 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if		
			11th m	5%	20042.00	21044.00		
			12th m	5%	21044.00	22096.00		
			13th m	5%	22096.00	23201.00		
			14th m	5%	23201.00	24361.00		
			15th m	5%	24361.00	25579.00		
			16th m	5%	25579.00	26858.00		
			17th m	5%	26858.00	28201.00		
			18th m	5%	28201.00	29611.00		
			19th m	5%	29611.00	31092.00		
			20th m	5%	31092.00	32647.00		
			Total Cost from 10m upto 20m		252085.00	264690.00		
			Avg Rate per metre		***25209.00***	***26469.00***		
12.19 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	33424.00	41780.00	43869.00	
			22nd	7.5%	35931.00	44914.00	47160.00	
			23rd m	7.5%	38626.00	48283.00	50697.00	
			24th m	7.5%	41523.00	51904.00	54499.00	
			25th m	7.5%	44637.00	55796.00	58586.00	
			26th m	7.5%	47985.00	59981.00	62980.00	
			27th m	7.5%	51584.00	64480.00	67704.00	
			28th m	7.5%	55453.00	69316.00	72782.00	
			29th m	7.5%	59612.00	74515.00	78241.00	
			30th m	7.5%	64083.00	80104.00	84109.00	
			Total Cost from 20m upto 30m		472858.00	591073.00	620627.00	
			Avg Rate per metre		***47286.00***	***59107.00***	***62063.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.19 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	70491.00	84589.00	88818.00	
			32nd	10%	77540.00	93048.00	97700.00	
			33rd m	10%	85294.00	102353.00	107471.00	
			34th m	10%	93823.00	112588.00	118217.00	
			35th m	10%	103205.00	123846.00	130038.00	
			36th m	10%	113526.00	136231.00	143043.00	
			37th m	10%	124879.00	149855.00	157348.00	
			38th m	10%	137367.00	164840.00	173082.00	
			39th m	10%	151104.00	181325.00	190391.00	
			40th m	10%	166214.00	199457.00	209430.00	
			Total Cost from 30m upto 40m		1123443.00	1348132.00	1415538.00	
			Avg Rate per metre		***112344.00***	***134813.00***	***141554.00***	
12.19		**C**	**Soft Rock (Twin D Type Well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.12 m/hour					
			a) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Sinker (skilled)	day	4.50	244.65	1100.92	L-15
			Sinking helper (semi-skilled)	day	15.00	176.43	2646.45	L-14
			Diver	day	1.50	294.05	441.08	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	1393.80	11610.33	P&M-075
			Air compressor with pneumatic breakers	hour	6.00	334.04	2004.24	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1361.46	
			Add for dewatering @ 5 per cent, if required				748.80	
			c) Overhead charges @ 0.25 on (a+b)				5049.13	
			d) Contractor's profit @ 0.1 on (a+b+c)				2524.56	
			Rate per metre = (a+b+c+d)				27770.20	
						say	***27770.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.19		D	**Hard Rock (Twin D Type Well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking @ 0.10 m/hour					
			a) Material					
			Geletine80 per cent	Kg	10.00	131.73	1317.34	M-110
			Electric detonators	each.	40.00	4.61	184.43	M-100/100
			b) Labour					
			Mate	day	1.34	329.34	441.31	L-12
			Driller	day	2.00	294.05	588.10	L-06
			Blaster	day	0.25	352.86	88.22	L-03
			Mazdoor	day	25.00	152.91	3822.65	L-13
			Mazdoor (Skilled)	day	4.25	244.65	1039.76	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1393.80	13937.97	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	334.04	1002.12	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				1046.01	
			Consumables in sinking @ 10 per cent of (b).				1598.61	
			d) Overhead charges @ 0.25 on (a+b+c)				6266.63	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3133.31	
			Rate per metre = (a+b+c+d+e)				34466.46	
						say	***34466.00***	
							34466.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.21	1207		**Sand Filling in Wells complete as per Drawing and Technical Specifications.**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Sand (assuming 20 per cent voids)	cum	1.20	1293.82	1552.58	M-006
			b) Labour					
			Mate	day	0.01	329.34	3.29	L-12
			Mazdoor	day	0.30	152.91	45.87	L-13
			c) Overhead charges @ 0.25 on (a+b)				400.44	
			d) Contractor's profit @ 0.1 on (a+b+c)				200.22	
			Rate per cum (a+b+c+d)				2202.41	
						say	***2202.00***	
							2202.00	
12.22	1200 & 1900		**Providing Steel Liner 10 mm thick for Curbs and 6 mm thick for Steining of Wells including Fabricating and Setting out as per Detailed Drawing.**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			i) Structural steel including 5 per cent wastage	tonne	1.05	60000.00	63000.00	M-185
			b) Labour					
			Mate	day	1.24	329.34	408.38	L-12
			Fitter	day	6.00	235.24	1411.44	L-08
			Blacksmith	day	5.00	317.57	1587.87	L-01
			Welder	day	5.00	352.86	1764.30	L-02
			Mazdoor	day	10.00	152.91	1529.06	L-13
			Electrodes, cutting gas and other consumables @ 5 per cent on cost a (a) above.				3150.00	
			c) Overhead charges @ 0.25 on (a+b)				18212.76	
			d) Contractor's profit @ 0.1 on (a+b+c)				9106.38	
			Rate for per MT (a+b+c+d)				100170.19	
						say	***100170.00***	
							100170.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.23	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					
			Unit = meter					
			Taking output = 15 m					
			a) Materials					
			PCC Grade M35	cum	6.62	9490.00	62823.80	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			Concrete to be cast with a tremie pipe 200mm dia.					
			b) Machinery(for boring and construction)					
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5486.97	32921.84	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	374.03	187.02	P&M-013
			Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.30	803.34	241.00	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	491.65	147.50	P&M-048
			Bentonite	kg	300.00	18.53	5557.55	M-070
			c) Labour					
			Mate/Supervisor	day	0.14	329.34	46.11	L-12
			Mazdoor	day	3.50	152.91	535.17	L-13
			d) Overhead charges @ 0.25 on (b+c)				9909.04	
			e) Contractor's profit @ 0.1 on (b+c+d)				4954.52	
			Cost for 15 m = a+b+c+d+d+e				117323.54	
			Rate per metre (a+b+c+d+e)/15				7821.57	
						say	***7822.00***	
							7822.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.24	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					
			Unit = meter					
			Taking output = 10 m					
			a) Materials					
			PCC Grade M35	cum	7.85	9490.00	74496.50	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			Concrete to be cast with a tremie pipe 200mm dia.					
			b) Machinery(for boring and construction)					
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5486.97	32921.84	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	374.03	187.02	P&M-013
			Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.40	803.34	321.34	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.40	491.65	196.66	P&M-048
			Bentonite	kg	350.00	18.53	6483.80	M-070
			c) Labour					
			Mate/Supervisor	day	0.16	329.34	52.69	L-12
			Mazdoor	day	4.00	152.91	611.62	L-13
			d) Overhead charges @ 0.25 on (b+c)				10193.74	
			e) Contractor's profit @ 0.1 on (b+c+d)				5096.87	
			Cost for 10 m = a+b+c+d+d+e				130562.09	
			Rate per metre (a+b+c+d+e)/10				13056.21	
						say	***13056.00***	
							13056.00	

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 12NA, N.S.C. BOSE ROAD

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.25	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					
			Unit = meter					
			Taking output = 9 m					
			a) Materials					
			PCC Grade M35	cum	10.17	9490.00	96513.30	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			Concrete to be cast with a tremie pipe 200mm dia.					
			b) Machinery(for boring and construction)					
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	5486.97	32921.84	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	374.03	187.02	P&M-013
			Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.50	803.34	401.67	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.50	491.65	245.83	P&M-048
			Bentonite	kg	385.00	18.53	7132.18	M-070
			c) Labour					
			Mate/Supervisor	day	0.18	329.34	59.28	L-12
			Mazdoor	day	4.50	152.91	688.08	L-13
			d) Overhead charges @ 0.25 on (b+c)				10408.97	
			e) Contractor's profit @ 0.1 on (b+c+d)				5204.49	
			Cost for 9 m = a+b+c+d+d+e				153762.65	
			Rate per metre (a+b+c+d+e)/9				17084.74	
						say	***17085.00***	
							17085.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.26	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					
			Unit = Running meter					
			Taking output = 40 metre					
			a) Materials					
			PCC Grade M35	cum	17.66	9490.00	167593.40	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.00	98.80	15808.13	M-085
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	71.02	4971.33	M-130
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	58.81	2940.50	M-179
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories..	hour	6.00	1176.20	7057.20	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	805.70	402.85	P&M-070
			d) Labour					
			Mate/Supervisor	day	0.12	329.34	39.52	L-12
			Mazdoor	day	3.00	152.91	458.72	L-13
			e) Overhead charges @ 0.25 on (b+c+d)				7919.56	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				3959.78	
			Cost for 40 m = a+b+c+d+e				211150.98	
			Rate per metre (a+b+c+d+e)/40				5278.77	
						say	***5279.00***	
							5279.00	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.27	1100 & 1700		**Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile diameter - 1000 mm					
			Unit = Running meter					
			Taking output = 30 metre					
			a) Materials					
			PCC Grade M35	cum	23.55	9490.00	223489.50	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.00	98.80	15808.13	M-085
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	71.02	4971.33	M-130
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	58.81	2940.50	M-179
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	1176.20	7057.20	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	805.70	402.85	P&M-070
			Hire and running charges for light crane for lowering reinforcement cage.	hour	0.50	374.03	187.02	P&M-013
			d) Labour					
			Mate/Supervisor	day	0.16	329.34	52.69	L-12
			Mazdoor	day	4.00	152.91	611.62	L-13
			e) Overhead charges @ 0.25 on (b+c+d)				8007.83	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4003.92	
			Cost for 30 m = a+b+c+d+e				267532.59	
			Rate per metre (a+b+c+d+e)/30				8917.75	
						say	***8918.00***	
							8918.00	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 12NA, N.S.C. BOSE ROAD

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.28	1100 & 1700		**Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile diameter - 1200 mm					
			Unit = Running meter					
			Taking output = 20 metre					
			a) Materials					
			PCC Grade M35	cum	22.61	9490.00	214568.90	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.00	98.80	15808.13	M-085
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	71.02	4971.33	M-130
			iii) Steel helmet on top of casing head during driving	Kg	50.00	58.81	2940.50	M-179
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	1176.20	7057.20	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	805.70	402.85	P&M-070
			d) Labour					
			Mate/Supervisor	day	0.18	329.34	59.28	L-12
			Mazdoor	day	4.50	152.91	688.08	L-13
			e) Overhead charges @ 0.25 on (b+c+d)				7981.84	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				3990.92	
			Cost for 20 m = a+b+c+d+e				258469.02	
			Rate per metre (a+b+c+d+e)/20				12923.45	
						say	***12923.00***	
							12923.00	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.29	1100 & 1700		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile Diameter = 500 mm					
			Unit = Running Meter					
			Taking output = 60 m					
			a) Materials					
			RCC Grade M35	cum	11.78	9053.00	106644.34	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I Shoes	Kg	240.00	98.80	23712.19	M-085
			b) M.S. shoes	Kg	105.00	77.19	8105.37	M-131
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	58.81	1764.30	M-179
			c) Machinery					
			Crane20 t capacity	hour	6.00	940.96	5645.76	P&M-073
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	999.77	5998.62	P&M-090
			d) Labour					
			Mate/Supervisor	day	0.12	329.34	39.52	L-12
			Mazdoor	day	3.00	152.91	458.72	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				1523.69	
			e) Overhead charges @ 0.25 on (b+c+d)				11812.04	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				5906.02	
			Cost for 60 m = a+b+c+d+e+f				171610.57	
			Rate per metre (a+b+c+d+e+f)/60				2860.18	
						say	***2860.00***	
							2860.00	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.30	1100 & 1700		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile Diameter = 750 mm					
			Unit = Running Meter					
			Taking output = 50 m					
			a) Materials					
			RCC Grade M35	cum	22.08	9053.00	199890.24	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I. shoes	Kg	160.00	98.80	15808.13	M-085
			b) M.S. shoes	Kg	70.00	77.19	5403.58	M-131
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	40.00	58.81	2352.40	M-179
			c) Machinery					
			Crane 40 T capacity	hour	6.00	993.89	5963.33	P&M-074
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	999.77	5998.62	P&M-090
			d) Labour					
			Mate/Supervisor	day	0.16	329.34	52.69	L-12
			Mazdoor	day	4.00	152.91	611.62	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				2360.81	
			e) Overhead charges @ 0.25 on (b+c+d)				9637.80	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4818.90	
			Cost for 50 m = a+b+c+d+e+f				252898.12	
			Rate per metre (a+b+c+d+e+f)/50				5057.96	
						say	***5058.00***	
							5058.00	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.31	1100 & 1700		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile Diameter = 1000 mm					
			Unit = Running Meter					
			Taking output = 40 m					
			a) Materials					
			RCC Grade M35	cum	31.40	9053.00	284264.20	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I. shoes for the pile	Kg	160.00	98.80	15808.13	M-085
			b) M.S. shoes @ 35 Kg per pile of 15 m	Kg	70.00	77.19	5403.58	M-131
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	50.00	58.81	2940.50	M-179
			c) Machinery					
			Crane 50 t capacity.	hour	6.00	1336.16	8016.98	P&M-011
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	999.77	5998.62	P&M-090
			d) Labour					
			Mate/Supervisor	day	0.20	329.34	65.87	L-12
			Mazdoor	day	5.00	152.91	764.53	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				3232.62	
			e) Overhead charges @ 0.25 on (b+c+d)				10557.71	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				5278.85	
			Cost for 40 m = a+b+c+d+e+f				342331.59	
			Rate per metre (a+b+c+d+e+f)/40				8558.29	
						say	***8558.00***	
							8558.00	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.32	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					
			Unit = Running Meter					
			Taking output = 60 m					
			a) Materials					
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)	cum	5.40	9053.00	48886.20	Item 12.11 (F) iv
			b) Material Pile shoes					
			a) C I shoes	kg	240.00	98.80	23712.19	M-085
			b) M. S shoes	kg	105.00	77.19	8105.37	M-131
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	58.81	1764.30	M-179
			c) Machinery					
			Crane 10 tonne capacity	hour	6.00	882.15	5292.90	P&M-071
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	999.77	5998.62	P&M-090
			d) Labour					
			Mate/Supervisor	day	0.12	329.34	39.52	L-12
			Mazdoor	day	3.00	152.91	458.72	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				942.58	
			e) Overhead charges @ 0.25 on (b+c+d)				11578.55	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				5789.27	
			Cost for 60 m = a+b+c+d+e+f				112568.22	
			Rate per metre (a+b+c+d+e+f)/60				1876.14	
						say	***1876.00***	
							1876.00	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.33	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					
			Unit = Running Meter					
			Taking output = 50 m					
			a) Materials					
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)	cum	12.50	9053.00	113162.50	Item 12.11 (F) iv
			b) Material Pile shoes					
			a) C I shoes	kg	160.00	98.80	15808.13	M-085
			b) M. S shoes	kg	70.00	77.19	5403.58	M-131
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	58.81	1764.30	M-179
			c) Machinery					
			Crane 20 tonne capacity	hour	6.00	940.96	5645.76	P&M-073
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	999.77	5998.62	P&M-090
			d) Labour					
			Mate/Supervisor	day	0.16	329.34	52.69	L-12
			Mazdoor	day	4.00	152.91	611.62	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				1484.47	
			e) Overhead charges @ 0.25 on (b+c+d)				9192.29	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4596.15	
			Cost for 50 m = a+b+c+d+e+f				163720.12	
			Rate per metre (a+b+c+d+e+f)/50				3274.40	
						say	***3274.00***	
							3274.00	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.34	1100 &1700		**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					
			Unit = Running Meter					
			Taking output = 40 m					
			a) Materials					
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 13.11(F) (IV)	cum	22.50	9053.00	203692.50	Item 12.11 (F) iv
			b) Material					
			Pile shoes					
			a) C I shoes	kg	160.00	98.80	15808.13	M-085
			b) M. S shoes	kg	70.00	77.19	5403.58	M-131
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	58.81	1764.30	M-179
			c) Machinery					
			Crane 20 tonne capacity	hour	6.00	940.96	5645.76	P&M-073
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	999.77	5998.62	P&M-090
			d) Labour					
			Mate/Supervisor	day	0.18	329.34	59.28	L-12
			Mazdoor	day	4.50	152.91	688.08	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				2390.60	
			e) Overhead charges @ 0.25 on (b+c+d)				9439.59	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				4719.79	
			Cost for 40 m = a+b+c+d+e+f				255610.23	
			Rate per metre (a+b+c+d+e+f)/40				6390.26	
						say	***6390.00***	
							6390.00	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.35	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)					
			Unit = Running Meter					
			Taking output = 70 m					
			a) Materials					
			Structural steel including 5 per cent wastage @ 82.20 kg/m	tonnes	6.04	60000.00	362400.00	M-185
			b) Machinery					
			Crane 10 T capacity	hour	6.00	882.15	5292.90	P&M-071
			Vibrating Pile driving hammer complete with power unit and other accessories.	hour	6.00	999.77	5998.62	P&M-090
			c) Labour					
			Mate/Supervisor	day	0.12	329.34	39.52	L-12
			Mazdoor	day	3.00	152.91	458.72	L-13
			Add 0.5 per cent of (a+b+c) for providing steel helmet on top of pile head during driving, stacking of piles at site, providing anti-corrosion treatment and other imponderables during installation.				1870.95	
			d) Overhead charges @ 0.25 on (a+b+c)				94015.18	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				47007.59	
			Cost for 70 m = a+b+c+d+e				517083.47	
			Rate per metre (a+b+c+d+e)/70				7386.91	
						say	***7387.00***	
							7387.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.36	**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)					
			Unit = Running Meter					
			Taking output = 60 m					
			a) Materials					
			Structural steel including 5 per cent wastage @92.50 kg/m	tonnes	5.83	60000.00	349800.00	M-185
			b) Machinery					
			Crane 10 T capacity	hour	6.00	882.15	5292.90	P&M-071
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	999.77	5998.62	P&M-090
			c) Labour					
			Mate/Supervisor	day	0.14	329.34	46.11	L-12
			Mazdoor	day	3.50	152.91	535.17	L-13
			Add 0.5 per cent of (a+b+c) for providing steel helmet and cushion block on top of pile head during driving, stacking of piles at site, providing anti-corrosive treatment and other imponderables during installation.				1808.36	
			d) Overhead charges @ 0.25 on (a+b+c)				90870.29	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				45435.15	
			Cost for 60 m = a+b+c+d+e				499786.60	
			Rate per metre (a+b+c+d+e)/60				8329.78	
						say	***8330.00***	
							8330.00	
12.37	**1100**		**Pile Load Test on single Vertical Pile in accordance with IS:2911(Part-IV)**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Initial and routine load test	tonne	1.00	363.00	363.00	
			b) Lateral load test	tonne	1.00	6050.00	6050.00	
		Note	Although, this item is incidental to work and is not required to be included in BOQ of contract, the same is required to be added in the estimate to assess cost of work.				**6413.00**	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.38	**1100, 1500 &1700**		**Cement Concrete for Reinforced Concrete in Pile Cap complete as per Drawing and Technical Specification**					
		A	**RCC Grade M20**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	5.12	8939.12	45768.29	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	294.05	441.08	L-10
			Mazdoor for concreting	day	20.00	152.91	3058.12	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator (capacity 33 KVA)	hour	6.00	365.80	2194.79	P&M-079
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3276.75	
			d) Overhead charges @ 0.25 on (a+b+c)				21298.89	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				10649.44	
			Cost for 15 cum = a+b+c+d+e				117143.89	
			Rate per metre (a+b+c+d+e)/15				7809.59	
						say	***7810.00***	
							7810.00	
12.38A		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	5.12	8939.12	45768.29	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-004
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.16	329.34	52.69	L-12
			Mason	day	0.38	294.05	111.74	L-10
			Mazdoor for concreting	day	2.50	152.91	382.27	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2301.82	1726.37	P&M-002
			Generator 100 KVA	hour	0.75	730.42	547.82	P&M-080
			Loader (capacity 1 cum)	hour	0.75	803.34	602.51	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	973.89	1947.79	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	47.05	5292.90	Lead =3 km & P&M-050
			Concrete Pump	hour	0.75	275.23	206.42	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3414.93	
			d) Overhead charges @ 0.25 on (a+b+c)				22197.07	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11098.54	
			Cost for 15 cum = a+b+c+d+e				122083.90	
			Rate per metre (a+b+c+d+e)/15				8138.93	
						say	***8139.00***	
							8139.00	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.38		**B**	**RCC Grade M25**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	5.99	8939.12	53545.33	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	294.05	441.08	L-10
			Mazdoor for concreting	day	20.00	152.91	3058.12	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator (capacity 33 KVA)	hour	6.00	365.80	2194.79	P&M-079
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3587.83	
			d) Overhead charges @ 0.25 on (a+b+c)				23320.92	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11660.46	
			Cost for 15 cum = a+b+c+d+e				128265.05	
			Rate per metre (a+b+c+d+e)/15				8551.00	
						say	***8551.00***	
							8551.00	
12.38B		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	5.99	8939.12	53545.33	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-004
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.16	329.34	52.69	L-12
			Mason	day	0.38	294.05	111.74	L-10
			Mazdoor for concreting	day	2.50	152.91	382.27	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2301.82	1726.37	P&M-002
			Generator 125 KVA	hour	0.75	979.77	734.83	P&M-018
			Loader (capacity 1 cum)	hour	0.75	803.34	602.51	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	973.89	1947.79	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	47.05	5292.90	Lead =3 km & P&M-050
			Concrete Pump	hour	0.75	275.23	206.42	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3733.50	
			d) Overhead charges @ 0.25 on (a+b+c)				24267.73	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12133.86	
			Cost for 15 cum = a+b+c+d+e				133472.50	
			Rate per metre (a+b+c+d+e)/15				8898.17	
						say	***8898.00***	
							8898.00	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.38		C	**RCC Grade M30**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	6.10	8939.12	54528.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	294.05	441.08	L-10
			Mazdoor for concreting	day	20.00	152.91	3058.12	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator (capacity 33 KVA)	hour	6.00	365.80	2194.79	P&M-079
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3627.17	
			d) Overhead charges @ 0.25 on (a+b+c)				23576.58	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11788.29	
			Cost for 15 cum = a+b+c+d+e				129671.17	
			Rate per metre (a+b+c+d+e)/15				8644.74	
						say	***8645.00***	
							8645.00	
'12.38C		(ii)	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	6.10	8939.12	54528.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-004
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.16	329.34	52.69	L-12
			Mason	day	0.38	294.05	111.74	L-10
			Mazdoor for concreting	day	2.50	152.91	382.27	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2301.82	1726.37	P&M-002
			Generator 100 KVA	hour	0.75	730.42	547.82	P&M-080
			Loader (capacity 1 cum)	hour	0.75	803.34	602.51	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	973.89	1947.79	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	47.05	5292.90	Lead =3 km & P&M-050
			Concrete Pump	hour	0.75	275.23	206.42	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3765.35	
			d) Overhead charges @ 0.25 on (a+b+c)				24474.76	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12237.38	
			Cost for 15 cum = a+b+c+d+e				134611.19	
			Rate per metre (a+b+c+d+e)/15				8974.08	
						say	***8974.00***	
							8974.00	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.38		D	**RCC Grade M35**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	6.33	8939.12	56584.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	294.05	441.08	L-10
			Mazdoor	day	20.00	152.91	3058.12	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator (capacity 33 KVA)	hour	6.00	365.80	2194.79	P&M-079
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3709.41	
			d) Overhead charges @ 0.25 on (a+b+c)				24111.14	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12055.57	
			Cost for 15 cum = a+b+c+d+e				132611.25	
			Rate per metre (a+b+c+d+e)/15				8840.75	
						say	***8841.00***	
							8841.00	
'12.38D		(ii)	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	6.33	8939.12	56584.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-004
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.16	329.34	52.69	L-12
			Mason	day	0.38	294.05	111.74	L-10
			Mazdoor for concreting	day	2.50	152.91	382.27	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2301.82	1726.37	P&M-002
			Generator 125 KVA	hour	0.75	979.77	734.83	P&M-018
			Loader (capacity 1 cum)	hour	0.75	803.34	602.51	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	973.89	1947.79	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	47.05	5292.90	Lead =3 km & P&M-050
			Concrete Pump	hour	0.75	275.23	206.42	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3855.07	
			d) Overhead charges @ 0.25 on (a+b+c)				25057.94	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12528.97	
			Cost for 15 cum = a+b+c+d+e				137818.70	
			Rate per metre (a+b+c+d+e)/15				9187.91	
						say	***9188.00***	
							9188.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.39	**1100&1700**		**Levelling Course for Pile cap**					
			Providing and laying of PCC M15 levelling course 100mm thick below the pile cap.					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	4.13	8939.12	36918.57	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			40 mm aggregate	cum	8.10	1411.44	11432.66	M-055
			20 mm Aggregate	cum	4.05	1529.06	6192.69	M-053
			10 mm Aggregate	cum	1.35	1529.06	2064.23	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	294.05	441.08	L-10
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			d) Overhead charges @ 0.25 on (a+b+c)				17987.57	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				8993.78	
			Cost for 15 cum = a+b+c+d+e				98931.62	
			Rate per metre (a+b+c+d+e)/15				6595.44	
						say	***6595.00***	
							6595.00	
12.40	**1600**		**Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			HYSD bars including5 per cent overlaps and wastage	tonne	1.05	44000.00	46200.00	M-087
			Binding wire	Kg	6.00	92.63	555.75	M-071
			b) Labour for cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.40	329.34	131.73	L-12
			Blacksmith	day	2.00	352.86	705.72	L-02
			Mazdoor	day	6.00	152.91	917.44	L-13
			c) Overhead charges @ 0.25 on (a+b)				12127.66	
			d) Contractor's profit @ 0.1 on (a+b+c)				6063.83	
			Rate per MT (a+b+c+d)				66702.14	
						say	***66702.00***	
							66702.00	
12.41	**1600**		**Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			MS bars including 5 per cent overlaps and wastage	tonne	1.05	56457.60	59280.48	M-132
			Binding wire	Kg	6.00	92.63	555.75	M-071
			b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.43	329.34	141.61	L-12
			Blacksmith	day	2.25	352.86	793.94	L-02
			Mazdoor	day	6.50	152.91	993.89	L-13
			c) Overhead charges @ 0.25 on (a+b)				15441.42	
			d) Contractor's profit @ 0.1 on (a+b+c)				7720.71	
			Rate for per MT (a+b+c+d)				84927.80	
						say	***84928.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
							85526.00	

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CHAPTER-13
SUB-STRUCTURE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.1	1300 & 2200		**Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and Technical Specifications**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Bricks Ist class	each	500.00	8.23	4116.70	M-084
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	0.24	5945.00	1426.80	Item 12.6 (A)
			b) Labour					
			Mate	day	0.06	329.34	19.76	L-12
			Mason	day	0.80	352.86	282.29	L-11
			Mazdoor	day	0.80	152.91	122.32	L-13
			Add for scaffolding @ 5 per cent of cost of material and labour				298.39	
			c) Overhead charges @ 0.25 on (a+b)				1566.57	
			d) Contractor's profit @ 0.1 on (a+b+c)				783.28	
			Rate per cum (a+b+c+d)				8616.12	
						say	***8616.00***	
							8616.00	
13.2	1300 & 2200		**Pointing with cement mortar (1:3) on brick work in substructure as per Technical Specifications**					
			Unit = 10 sqm					
			Taking output = 10 sqm					
			a) Material					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.03	5945.00	178.35	Item 12.6 (A)
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mason	day	0.50	352.86	176.43	L-11
			Mazdoor	day	0.50	152.91	76.45	L-13
			c) Overhead charges @ 0.25 on (a+b)				111.10	
			d) Contractor's profit @ 0.1 on (a+b+c)				55.55	
			Rate per 10 sqm (a+b+c+d)				611.06	
						say	***611.00***	
							611.00	
	Note		Scaffolding is already included in item 13.1					
13.3	1300 & 2200		**Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical Specifications**					
			Unit = 10 sqm					
			Taking output = 10 sqm					
			a) Material					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.144	5945.00	856.08	Item 12.6 (A)
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mason	day	0.50	352.86	176.43	L-11
			Mazdoor	day	0.50	152.91	76.45	L-13
			c) Overhead charges @ 0.25 on (a+b)				280.53	
			d) Contractor's profit @ 0.1 on (a+b+c)				140.27	
			Rate per 10 sqm (a+b+c+d)				1542.94	
						say	***1543.00***	
							1543.00	
	Note		1.Scaffolding is already included in item no. 13.1					
			2.The number of masons and Mazdoors already catered in the cement mortar have been taken into account while providing these categories in brick masonry, pointing and plastering.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.4	**1400 & 2200**		**Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications**					
		A	**Random Rubble Masonry**					
			(coursed/uncoursed)					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.00	802.76	802.76	M-153
			Through and bond stone	No	7.00	6.80	47.59	M-188
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	5945.00	1961.85	Item 12.6 (A)
			b) Labour					
			Mate	day	0.10	329.34	32.93	L-12
			Mason	day	1.20	352.86	423.43	L-11
			Mazdoor	day	1.20	152.91	183.49	L-13
			Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				172.60	
			c) Overhead charges @ 0.25 on (a+b)				906.16	
			d) Contractor's profit @ 0.1 on (a+b+c)				453.08	
			Rate per cum (a+b+c+d)				4983.89	
						say	***4984.00***	
							4984.00	
13.4		**B**	**Coursed rubble masonry (first sort)**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.10	802.76	883.03	M-153
			Through and bond stone	each	7.00	6.80	47.59	M-188
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.30	5945.00	1783.50	Item 12.6 (A)
			b) Labour					
			Mate	day	0.12	329.34	39.52	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	1.50	152.91	229.36	L-13
			Add for scaffolding @ 5 per cent of cost of material and labour				175.61	
			c) Overhead charges @ 0.25 on (a+b)				921.98	
			d) Contractor's profit @ 0.1 on (a+b+c)				460.99	
			Rate per cum (a+b+c+d)				5070.87	
						say	***5071.00***	
							5071.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.4		C	**Ashlar masonry (first sort)**					
			Plain ashlar					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.11	1074.46	1192.65	M-175
			Through and bond stone	each	7.00	6.80	47.59	M-188
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	5945.00	1961.85	Item 12.6 (A)
			b) Labour for masonry work					
			Mate	day	0.20	329.34	65.87	L-12
			Mason	day	2.50	352.86	882.15	L-11
			Mazdoor	day	2.50	152.91	382.27	L-13
			Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				226.62	
			c) Overhead charges @ 0.25 on (a+b)				1189.75	
			d) Contractor's profit @ 0.1 on (a+b+c)				594.87	
			Rate per cum (a+b+c+d)				6543.61	
						say	***6544.00***	
							6544.00	
	Note		The labour already considered in the cement mortar have been taken into account while providing these categories in the stone masonry works.					
13.5	**1500, 1700 & 2200**		**Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications**					
			Unit = cum					
			Taking output = 1 cum					
		A	**PCC Grade M15**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (A) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (A)				4899.00	Item 12.8 (A)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		489.90	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1347.23	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				673.61	
			Rate per cum (a+b+c+d+e+f)				7409.74	
						say	***7410.00***	
							7410.00	
13.5		B	**PCC Grade M20**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (B) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (B)				5438.00	Item 12.8 (B) PCC
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		543.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1495.45	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				747.73	
			Rate per cum (a+b+c+d+e+f)				8224.98	
						say	***8225.00***	
							8225.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5		C	**PCC Grade M25**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (D) upto 5 m height with the only change that the provision of form work shall be 10 per cent instead of 3.75 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				5933.00	Item 12.8 (D)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		593.30	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1631.58	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				815.79	
			Rate per cum (a+b+c+d+e+f)				8973.66	
						say	***8974.00***	
							8974.00	
13.5 C (p)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				5806.00	Item 12.8 (D)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		580.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1596.65	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				798.33	
			Rate per cum (a+b+c+d+e+f)				8781.58	
						say	***8782.00***	
							8782.00	
13.5 C		(q)	**Height 5m to 10m**					
			Same as Item 12.8 (D) with the following changes: (i) Add 2 per cent of cost of material, Labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 12 per cent instead of 3.75 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				5933.00	Item 12.8 (D)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		711.96	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		118.66	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1690.91	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				845.45	
			Rate per cum (a+b+c+d+e+f)				9299.98	
						say	***9300.00***	
							9300.00	
13.5 C (q)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				5806.00	Item 12.8 (D)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		696.72	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		116.12	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1654.71	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				827.36	
			Rate per cum (a+b+c+d+e+f)				9100.91	
						say	***9101.00***	
							9101.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5 C		**(r)**	**Height above 10m**					
			Same as Item 12.8 (D) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 3.75 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				5933.00	Item 12.8 (D)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		889.95	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		237.32	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1765.07	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				882.53	
			Rate per cum (a+b+c+d+e+f)				9707.87	
						say	***9708.00***	
							9708.00	
13.5 C (r)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				5806.00	Item 12.8 (D)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		870.90	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		232.24	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1727.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				863.64	
			Rate per cum (a+b+c+d+e+f)				9500.07	
						say	***9500.00***	
							9500.00	
13.5		**D**	**PCC Grade M30**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (F) upto 5 m height with the only change that the provision of form work shall be 10 per cent instead of 3.50 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				5986.00	Item 12.8 (F)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		598.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1646.15	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				823.08	
			Rate per cum (a+b+c+d+e+f)				9053.83	
						say	***9054.00***	
							9054.00	
13.5 D (p)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				5855.00	Item 12.8 (F)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		585.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1610.13	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				805.06	
			Rate per cum (a+b+c+d+e+f)				8855.69	
						say	***8856.00***	
							8856.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5 D		**(q)**	**Height 5m to 10m**					
			Same as Item 12.8 (F) with the following changes: (i) Add 2 per cent of cost of material, Labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 12 per cent instead of 3.50 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				5986.00	Item 12.8 (F)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		718.32	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		119.72	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1706.01	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				853.01	
			Rate per cum (a+b+c+d+e+f)				9383.06	
						say	***9383.00***	
							9383.00	
13.5 D (q)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				5855.00	Item 12.8 (F)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		702.60	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		117.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1668.68	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				834.34	
			Rate per cum (a+b+c+d+e+f)				9177.71	
						say	***9178.00***	
							9178.00	
13.5 D		**(r)**	**Height above 10m**					
			Same as Item 12.8 (F) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 3.50 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				5986.00	Item 12.8 (F)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		897.90	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		239.44	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1780.84	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				890.42	
			Rate per cum (a+b+c+d+e+f)				9794.59	
						say	***9795.00***	
							9795.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5 D (r)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				5855.00	Item 12.8 (F)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		878.25	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		234.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1741.86	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				870.93	
			Rate per cum (a+b+c+d+e+f)				9580.24	
						say	***9580.00***	
							9580.00	
13.5		E	**RCC Grade M20**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (C) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				5510.00	Item 12.8 (C)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		551.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1515.25	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				757.63	
			Rate per cum (a+b+c+d+e+f)				8333.88	
						say	***8334.00***	
							8334.00	
13.5 E (p)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				5380.00	Item 12.8 (C)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		538.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1479.50	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				739.75	
			Rate per cum (a+b+c+d+e+f)				8137.25	
						say	***8137.00***	
							8137.00	
13.5 E		(q)	**Height 5m to 10m**					
			For height, upto 10m, add 2 per cent of cost as above excluding formwork. For cost of formwork add 12 per cent of cost of material, labour and machinery instead of 4 per cent .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				5510.00	Item 12.8 (C)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		661.20	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		110.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1570.35	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				785.18	
			Rate per cum (a+b+c+d+e+f)				8636.93	
						say	***8637.00***	
							8637.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5 E (q)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				5380.00	Item 12.8 (C)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		645.60	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		107.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1533.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				766.65	
			Rate per cum (a+b+c+d+e+f)				8433.15	
						say	***8433.00***	
							8433.00	
13.5 E		(r)	**Height above 10m**					
			Same as Item 12.8 (C) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 4 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				5510.00	Item 12.8 (C)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		826.50	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		220.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1639.23	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				819.61	
			Rate per cum (a+b+c+d+e+f)				9015.74	
						say	***9016.00***	
							9016.00	
13.5 E (r)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				5380.00	Item 12.8 (C)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		807.00	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		215.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1600.55	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				800.28	
			Rate per cum (a+b+c+d+e+f)				8803.03	
						say	***8803.00***	
							8803.00	
13.5		F	**RCC Grade M25**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (E) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3.75 per cent .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I				6011.00	Item 12.8 (E)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		601.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1653.03	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				826.51	
			Rate per cum (a+b+c+d+e+f)				9091.64	
						say	***9092.00***	
							9092.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5 F (p)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				6224.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		622.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1711.60	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				855.80	
			Rate per cum (a+b+c+d+e+f)				9413.80	
						say	***9414.00***	
							9414.00	
13.5 F		(q)	**Height 5m to 10m**					
			For height, upto 10m, add 1.8 per cent of cost as above excluding formwork. For cost of formwork add 11.8 per cent of cost of material, labour and machinery					
13.5 F (q)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				6224.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.80		734.43	
			Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.80		112.03	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1767.62	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				883.81	
			Rate per cum (a+b+c+d+e+f)				9721.89	
						say	***9722.00***	
							9722.00	
13.5 F		(r)	**Height above 10m**					
			For height, above 10m, add 4 per cent of cost as above excluding formwork. For cost of formwork add 15 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I				6011.00	Item 12.8 (E)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		901.65	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		240.44	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1788.27	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				894.14	
			Rate per cum (a+b+c+d+e+f)				9835.50	
						say	***9835.00***	
							9835.00	
13.5 F (r)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				6224.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		933.60	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		248.96	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1851.64	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				925.82	
			Rate per cum (a+b+c+d+e+f)				10184.02	
						say	***10184.00***	
							10184.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5		G	**RCC Grade M30**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (G) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3.5 per cent .					
13.5 G (p)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				6255.00	Item 12.8 (G)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		625.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1720.13	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				860.06	
			Rate per cum (a+b+c+d+e+f)				9460.69	
						say	***9461.00***	
							9461.00	
13.5 G		(q)	**Height 5m to 10m**					
			For height, upto 10m, add 1.6 per cent of cost as above excluding formwork. For cost of formwork add 11.5 per cent of cost of material, labour and machinery					
13.5 G (q)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				6255.00	Item 12.8 (G)
			d) formwork					
			Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.50		719.33	
			Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.60		100.08	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1768.60	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				884.30	
			Rate per cum (a+b+c+d+e+f)				9727.31	
						say	***9727.00***	
							9727.00	
13.5 G		(r)	**Height above 10m**					
			For height, above 10m, add 3.5 per cent of cost as above excluding formwork. For cost of formwork add 14 per cent of cost of material, labour and machinery					
13.5 G (r)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				6255.00	Item 12.8 (G)
			d) formwork					
			Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.00		875.70	
			Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.50		218.93	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1837.41	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				918.70	
			Rate per cum (a+b+c+d+e+f)				10105.73	
						say	***10106.00***	
							10106.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5		**H**	**RCC Grade M35**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (H) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3 per cent .					
13.5 H (p)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				6674.00	Item 12.8 (H)
			d) formwork					DIR used item
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		667.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1835.35	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				917.68	
			Rate per cum (a+b+c+d+e+f)				10094.43	
						say	***10094.00***	
							10094.00	
13.5 H		**(q)**	**Height 5m to 10m**					
			For height, upto 10m, add 1.4 per cent of cost as above excluding formwork. For cost of formwork add 11 per cent of cost of material, labour and machinery .					
13.5 H (q)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				6674.00	Item 12.8 (H)
			d) formwork					
			Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.00		734.14	
			Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.40		93.44	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1875.39	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				937.70	
			Rate per cum (a+b+c+d+e+f)				10314.67	
						say	***10315.00***	
							10315.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.5 H		**(r)**	**Height above 10m**					
			For height, above 10m, add 3 per cent of cost as above excluding formwork. For cost of formwork add 13 per cent of cost of material, labour and machinery					
13.5 H (r)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				6674.00	Item 12.8 (H)
			d) formwork					
			Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.00		867.62	
			Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.00		200.22	
			e) Overhead charges @ 0.25 on (a+b+c+d)				1935.46	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				967.73	
			Rate per cum (a+b+c+d+e+f)				10645.03	
						say	***10645.00***	
							10645.00	
	Note		The basic components of this analysis are the same as those of items 13.8 (A to H). The only changes are as under:					
			a) Ramps/Stairs: Extra expenditure on structures which are more than 5 m high @ 2 per cent of cost for height upto 10 m and 4 per cent for heights above 10 m will be involved for approaching the work spot by providing higher ramp/stair case for use by the working parties.					
			b) The above mentioned percentages have been suitably modified for different categories as cost for various categories varies, whereas effort for access for same height will be similar. As the cost of richer concrete is comparatively more, the percentage to be added has been reduced to maintain the same cost for extra efforts.					
13.6	**Section 1600 & 2200**		**Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications**					
			Output: MT					
			Taking output = 1 MT					
			a) Material					
			HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	44000.00	46200.00	M-087
			Binding wire	kg	6.00	92.63	555.75	M-071
			b) Labour for cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.34	329.34	111.97	L-12
			Blacksmith	day	2.00	352.86	705.72	L-02
			Mazdoor	day	6.50	152.91	993.89	L-13
			c) Overhead charges @ 0.25 on (a+b)				12141.83	
			d) Contractor's profit @ 0.1 on (a+b+c)				6070.92	
			Rate for per MT (a+b+c+d)				66780.09	
						say	***66780.00***	
							66780.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.8	**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**					
			Unit = Nos.					
			Taking output = 30 Nos.					
			a) Material					
			AC pipe 100 mm dia. (including wastage @ 5 per cent)	metre	31.50	1210.31	38124.76	M-056
			Average length of weep hole is taken as one metre for the purpose of estimating.					
			MS clamp	each.	30.00	30.88	926.26	M-129
			collar for AC pipe (average) taking 10% of above pipe rate	each.	10.00	121.03	1210.31	M-056/10
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.05	5945.00	297.25	Item 12.6 (A)
			b) Labour					
			Mate	day	0.03	329.34	9.88	L-12
			Mason	day	0.50	352.86	176.43	L-11
			Mazdoor	day	0.25	152.91	38.23	L-13
			c) Overhead charges @ 0.25 on (a+b)				10195.78	
			d) Contractor's profit @ 0.1 on (a+b+c)				5097.89	
			Cost for 30 m = a+b+c+d				56076.78	
			Rate per No. (a+b+c+d)/30				1869.23	
						say	***1869.00***	
							1869.00	
	Note		1. In case of stone masonry, the size of the weep hole shall be 150 mm x 80 mm or circular with 150 mm diameter.					
			2. For structure in stone masonry, the weep holes shall be deemed to be included in the item of stone masonry work and shall not be paid separately.					
13.9	**710.1.4. of IRC:78 & 2200**		**Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Granular material**					
			a) Labour					
			Mate	day	0.28	329.34	92.21	L-12
			Mazdoor	day	7.00	152.91	1070.34	L-13
			b) Material					
			Granular material	cum	12.00	978.88	11746.57	M-009
			c) Machinery					
			Plate compactor/power rammer	hour	2.50	256.41	641.03	P&M-086
			Water Tanker	hour	0.05	517.53	25.88	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				3394.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1697.00	
			Cost for 10 cum of granular backfill = a+b+c+d+e				18667.04	
			Rate per cum = (a+b+c+d+e)/10				1866.70	
						say	***1867.00***	
							1867.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.9		**B**	**Sandy material**					
			a) Labour					
			Mate	day	0.28	329.34	92.21	L-12
			Mazdoor for filling, watering, ramming etc.	day	7.00	152.91	1070.34	L-13
			b) Material					
			Sand	cum	12.00	1293.82	15525.84	M-006
			c) Machinery					
			Plate compactor/power rammer	hour	2.50	256.41	641.03	P&M-086
			Water Tanker	hour	0.06	517.53	31.05	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				4340.12	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2170.06	
			Cost for 10 cum of sandy backfill = a+b+c+d+e				23870.66	
			Rate per cum = (a+b+c+d+e)/10				2387.07	
						say	***2387.00***	
							2387.00	
13.10	**710.1.4. of IRC:78 and 2200**		**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.**					
			Unit = cum					
			Taking output = 10 cum.					
			a) Labour					
			Mate	day	0.32	329.34	105.39	L-12
			Mazdoor for filling, watering, ramming etc.	day	7.00	152.91	1070.34	L-13
			Mazdoor (Skilled)	day	1.00	244.65	244.65	L-15
			b) Material					
			Filter media of stone aggregate conforming to clause 2504.2.2. of MoRTH specifications.	cum	12.00	1190.60	14287.16	M-012
			c) Machinery					
			Water Tanker of 6 KL capacity	hour	0.06	517.53	31.05	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				3934.65	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1967.32	
			cost for 10 cum of Fiter Media = a+b+c+d+e				21640.56	
			Rate per cum = (a+b+c+d+e)/10				2164.06	
						say	***2164.00***	
							2164.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.11	**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.**					
			Unit: one tonne capacity					
			Considering a 250 tonne capacity bearing for this analysis					
			a) Labour					
			Mate	day	0.06	329.34	19.76	L-12
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			Mazdoor	day	1.00	152.91	152.91	L-13
			b) Material					
			Cast steel rocker bearing assembly of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	1.00	209951.70	209951.70	M-064
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				2099.52	
			c) Overhead charges @ 0.25 on (a+b)				53086.55	
			d) Contractor's profit @ 0.1 on (a+b+c)				26543.28	
			cost for 250 tonnes capacity bearing = a+b+c+d				291976.04	
			Rate per tonne capacity = (a+b+c+d)/250				1167.90	
						say	***1168.00***	
							1168.00	
13.12	**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.**					
			Unit: one tonne capacity					
			Considering a 250 tonne capacity bearing for this analysis					
			a) Labour					
			Mate	day	0.06	329.34	19.76	L-12
			Mazdoor	day	1.00	152.91	152.91	L-13
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			b) Material					
			Forged steel roller bearing of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	1.00	262439.63	262439.63	M-066
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				2624.40	
			c) Overhead charges @ 0.25 on (a+b)				66339.75	
			d) Contractor's profit @ 0.1 on (a+b+c)				33169.88	
			cost for 250 tonnes capacity bearing = a+b+c+d				364868.64	
			Rate per tonne capacity = (a+b+c+d)/250				1459.47	
						say	***1459.00***	
							1459.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.14	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 Technical Specifications.**					
			Unit: one cubic centimetre					
			Considering an elastomeric bearing of size 500 x 400 x 96 mm for this analysis.					
			Overall volume - 19200 cu.cm					
			Volume of 6 nos. 488 x 388 x 4 mm size reinforcing steel plates = 4545 cu.cm.					
			Hence volume of elastometer = 14655 cu.cm.					
			a) Labour					
			Mate	day	0.06	329.34	19.76	L-12
			Mazdoor	day	1.00	152.91	152.91	L-13
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			b) Material					
			Elastomeric bearing assembly consisting of 7 layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation, complete with all components as per drawing and Technical Specifications.	NOS	1.00	16937.28	16937.28	M-065
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				169.37	
			c) Overhead charges @ 0.25 on (a+b)				4350.41	
			d) Contractor's profit @ 0.1 on (a+b+c)				2175.21	
			cost for 19200cc of elastomeric bearing = a+b+c+d				23927.26	
			Rate per cc of elastomeric bearing = (a+b+c+d)/19200				1.25	
						say	***1.25***	
							1.25	
	Non-Sch		**Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Granular material**					
			a) Labour					
			Mate	day	0.28	329.34	92.21	L-12
			Mazdoor	day	7.00	152.91	1070.34	L-13
			b) Material					
			Granular material	cum	12.00	858.63	10303.51	M-009
			c) Machinery					
			Plate compactor/power rammer	hour	2.50	256.41	641.03	P&M-086
			Water Tanker	hour	0.05	517.53	25.88	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				3033.24	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1516.62	
			Cost for 10 cum of granular backfill = a+b+c+d+e				16682.84	
			Rate per cum = (a+b+c+d+e)/10				1668.28	
						say	***1668.00***	
							1668.00	

CHAPTER-14
SUPER-STRUCTURE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1	1500 &1600 1700		**Furnishing and Placing Reinforced/ Prestressed cement concrete in super-structure as per drawing and Technical Specification**					
		A	**RCC Grade M20**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.12	8939.12	45768.29	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.86	329.34	283.23	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**81841.00**			
			For formwork and staging add the following:					
14.1A Case I		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				81841.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		16368.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				24552.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				12276.15	
			Cost for 15 cum = a+b+c+d+e+f				135037.65	
			Rate per cum = (a+b+c+d+e+f)/15				9002.51	
						say	***9003.00***	
							9003.00	
14.1A Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				81841.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		20460.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				25575.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				12787.66	
			Cost for 15 cum = a+b+c+d+e+f				140664.22	
			Rate per cum = (a+b+c+d+e+f)/15				9377.61	
						say	***9378.00***	
							9378.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1A Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				81841.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		24552.30	
			e) Overhead charges @ 0.25 on (a+b+c+d)				26598.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				13299.16	
			Cost for 15 cum = a+b+c+d+e+f				146290.79	
			Rate per cum = (a+b+c+d+e+f)/15				9752.72	
						say	***9753.00***	
							9753.00	
14.1A Case I		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				81841.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		20460.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				25575.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				12787.66	
			Cost for 15 cum = a+b+c+d+e+f				140664.22	
			Rate per cum = (a+b+c+d+e+f)/15				9377.61	
						say	***9378.00***	
							9378.00	
14.1A Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				81841.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		24552.30	
			e) Overhead charges @ 0.25 on (a+b+c+d)				26598.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				13299.16	
			Cost for 15 cum = a+b+c+d+e+f				146290.79	
			Rate per cum = (a+b+c+d+e+f)/15				9752.72	
						say	***9753.00***	
							9753.00	
14.1A Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				81841.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		28644.35	
			e) Overhead charges @ 0.25 on (a+b+c+d)				27621.34	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				13810.67	
			Cost for 15 cum = a+b+c+d+e+f				151917.36	
			Rate per cum = (a+b+c+d+e+f)/15				10127.82	
						say	***10128.00***	
							10128.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1A		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	40.92	8939.12	365788.79	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	Lead =3 km & P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**680147.00**			
			For formwork and staging add the following:					
14.1A Case II		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				680147.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		136029.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				204044.10	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				102022.05	
			Cost for 120 cum = a+b+c+d+e+f				1122242.55	
			Rate per cum = (a+b+c+d+e+f)/120				9352.02	
						say	***9352.00***	
							9352.00	
14.1A Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				680147.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		170036.75	
			e) Overhead charges @ 0.25 on (a+b+c+d)				212545.94	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				106272.97	
			Cost for 120 cum = a+b+c+d+e+f				1169002.66	
			Rate per cum = (a+b+c+d+e+f)/120				9741.69	
						say	***9742.00***	
							9742.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1A Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				680147.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		204044.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				221047.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				110523.89	
			Cost for 120 cum = a+b+c+d+e+f				1215762.76	
			Rate per cum = (a+b+c+d+e+f)/120				10131.36	
						say	***10131.00***	
							10131.00	
14.1A Case II		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				680147.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		170036.75	
			e) Overhead charges @ 0.25 on (a+b+c+d)				212545.94	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				106272.97	
			Cost for 120 cum = a+b+c+d+e+f				1169002.66	
			Rate per cum = (a+b+c+d+e+f)/120				9741.69	
						say	***9742.00***	
							9742.00	
14.1A Case II		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				680147.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		204044.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				221047.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				110523.89	
			Cost for 120 cum = a+b+c+d+e+f				1215762.76	
			Rate per cum = (a+b+c+d+e+f)/120				10131.36	
						say	***10131.00***	
							10131.00	
14.1A Case II		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				680147.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		238051.45	
			e) Overhead charges @ 0.25 on (a+b+c+d)				229549.61	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				114774.81	
			Cost for 120 cum = a+b+c+d+e+f				1262522.87	
			Rate per cum = (a+b+c+d+e+f)/120				10521.02	
						say	***10521.00***	
							10521.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1		**B**	**RCC Grade M25**					
14.1B		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	47.95	8939.12	428630.80	M-086
			Coarse sand	cum	54.20	1176.20	63750.04	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.84	329.34	276.64	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	18.00	152.91	2752.31	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	Lead =3 km & P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**743224.00**			
			For formwork and staging add the following:					
14.1B Case II		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				743224.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		148644.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				222967.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				111483.60	
			Cost for 120 cum = a+b+c+d+e+f				1226319.60	
			Rate per cum = (a+b+c+d+e+f)/120				10219.33	
						say	***10219.00***	
							10219.00	
14.1B Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				743224.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		185806.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				232257.50	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				116128.75	
			Cost for 120 cum = a+b+c+d+e+f				1277416.25	
			Rate per cum = (a+b+c+d+e+f)/120				10645.14	
						say	***10645.00***	
							10645.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1B Case II		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				743224.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		185806.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				232257.50	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				116128.75	
			Cost for 120 cum = a+b+c+d+e+f				1277416.25	
			Rate per cum = (a+b+c+d+e+f)/120				10645.14	
						say	***10645.00***	
							10645.00	
14.1B Case II		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				743224.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		222967.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				241547.80	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				120773.90	
			Cost for 120 cum = a+b+c+d+e+f				1328512.90	
			Rate per cum = (a+b+c+d+e+f)/120				11070.94	
						say	***11071.00***	
							11071.00	
14.1B Case II		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				743224.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		260128.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				250838.10	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				125419.05	
			Cost for 120 cum = a+b+c+d+e+f				1379609.55	
			Rate per cum = (a+b+c+d+e+f)/120				11496.75	
						say	***11497.00***	
							11497.00	
14.1		**C**	**RCC Grade M 30**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.10	8939.12	54528.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	21.00	152.91	3211.03	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**90768.00**			

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			For formwork and staging add the following:					
14.1C Case I		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90768.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		18153.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				27230.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				13615.20	
			Cost for 15 cum = a+b+c+d+e+f				149767.20	
			Rate per cum = (a+b+c+d+e+f)/15				9984.48	
						say	***9984.00***	
							9984.00	
14.1C Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90768.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		22692.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				28365.00	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14182.50	
			Cost for 15 cum = a+b+c+d+e+f				156007.50	
			Rate per cum = (a+b+c+d+e+f)/15				10400.50	
						say	***10401.00***	
							10401.00	
14.1C Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90768.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		27230.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				29499.60	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14749.80	
			Cost for 15 cum = a+b+c+d+e+f				162247.80	
			Rate per cum = (a+b+c+d+e+f)/15				10816.52	
						say	***10817.00***	
							10817.00	
14.1C Case I		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90768.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		22692.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				28365.00	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14182.50	
			Cost for 15 cum = a+b+c+d+e+f				156007.50	
			Rate per cum = (a+b+c+d+e+f)/15				10400.50	
						say	***10401.00***	
							10401.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1C Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90768.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		27230.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				29499.60	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14749.80	
			Cost for 15 cum = a+b+c+d+e+f				162247.80	
			Rate per cum = (a+b+c+d+e+f)/15				10816.52	
						say	***10817.00***	
							10817.00	
14.1C Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90768.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		31768.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				30634.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				15317.10	
			Cost for 15 cum = a+b+c+d+e+f				168488.10	
			Rate per cum = (a+b+c+d+e+f)/15				11232.54	
						say	***11233.00***	
							11233.00	
14.1C		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump.**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.79	8939.12	436139.66	M-086
			Coarse sand	cum	54.60	1176.20	64220.52	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.88	329.34	289.82	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	19.00	152.91	2905.21	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	Lead =3 km & P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**751369.00**			
			For formwork and staging add the following:					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1C Case II		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				751369.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		150273.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				225410.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				112705.35	
			Cost for 120 cum = a+b+c+d+e+f				1239758.85	
			Rate per cum = (a+b+c+d+e+f)/120				10331.32	
						say	***10331.00***	
							10331.00	
14.1C Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				751369.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		187842.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				234802.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				117401.41	
			Cost for 120 cum = a+b+c+d+e+f				1291415.47	
			Rate per cum = (a+b+c+d+e+f)/120				10761.80	
						say	***10762.00***	
							10762.00	
14.1C Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				751369.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		225410.70	
			e) Overhead charges @ 0.25 on (a+b+c+d)				244194.93	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				122097.46	
			Cost for 120 cum = a+b+c+d+e+f				1343072.09	
			Rate per cum = (a+b+c+d+e+f)/120				11192.27	
						say	***11192.00***	
							11192.00	
14.1C Case II		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				751369.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		187842.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				234802.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				117401.41	
			Cost for 120 cum = a+b+c+d+e+f				1291415.47	
			Rate per cum = (a+b+c+d+e+f)/120				10761.80	
						say	***10762.00***	
							10762.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1C Case II		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				751369.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		225410.70	
			e) Overhead charges @ 0.25 on (a+b+c+d)				244194.93	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				122097.46	
			Cost for 120 cum = a+b+c+d+e+f				1343072.09	
			Rate per cum = (a+b+c+d+e+f)/120				11192.27	
						say	***11192.00***	
							11192.00	
14.1C Case II		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				751369.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		262979.15	
			e) Overhead charges @ 0.25 on (a+b+c+d)				253587.04	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				126793.52	
			Cost for 120 cum = a+b+c+d+e+f				1394728.71	
			Rate per cum = (a+b+c+d+e+f)/120				11622.74	
						say	***11623.00***	
							11623.00	
14.1		**D**	**RCC/PSC Grade M35**					
		Case I	**Using Concrete Mixer.**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.33	8939.12	56584.63	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			b) Labour					
			Mate	day	0.90	329.34	296.40	L-12
			Mason	day	1.50	352.86	529.29	L-11
			Mazdoor	day	21.00	152.91	3211.03	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**92824.00**			
			For formwork and staging add the following:					
14.1D Case I		**(i)**	**For solid slab super-structure, 18-28 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 18 per cent of (a+b+c)		18.00		16708.32	
			e) Overhead charges @ 0.25 on (a+b+c+d)				27383.08	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				13691.54	
			Cost for 15 cum = a+b+c+d+e+f				150606.94	
			Rate per cum = (a+b+c+d+e+f)/15				10040.46	
						say	***10040.00***	
							10040.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1D Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		21349.52	
			e) Overhead charges @ 0.25 on (a+b+c+d)				28543.38	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14271.69	
			Cost for 15 cum = a+b+c+d+e+f				156988.59	
			Rate per cum = (a+b+c+d+e+f)/15				10465.91	
						say	***10466.00***	
							10466.00	
14.1D Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		25990.72	
			e) Overhead charges @ 0.25 on (a+b+c+d)				29703.68	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14851.84	
			Cost for 15 cum = a+b+c+d+e+f				163370.24	
			Rate per cum = (a+b+c+d+e+f)/15				10891.35	
						say	***10891.00***	
							10891.00	
14.1D Case I		**(ii)**	**For T-beam & slab, 23-33 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		21349.52	
			e) Overhead charges @ 0.25 on (a+b+c+d)				28543.38	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14271.69	
			Cost for 15 cum = a+b+c+d+e+f				156988.59	
			Rate per cum = (a+b+c+d+e+f)/15				10465.91	
						say	***10466.00***	
							10466.00	
14.1D Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		25990.72	
			e) Overhead charges @ 0.25 on (a+b+c+d)				29703.68	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14851.84	
			Cost for 15 cum = a+b+c+d+e+f				163370.24	
			Rate per cum = (a+b+c+d+e+f)/15				10891.35	
						say	***10891.00***	
							10891.00	
14.1D Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 33 per cent of (a+b+c)		33.00		30631.92	
			e) Overhead charges @ 0.25 on (a+b+c+d)				30863.98	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				15431.99	
			Cost for 15 cum = a+b+c+d+e+f				169751.89	
			Rate per cum = (a+b+c+d+e+f)/15				11316.79	
						say	***11317.00***	
							11317.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1D Case I		**(iii)**	**For box girder and balanced cantilever, 38-58 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 38 per cent of (a+b+c)		38.00		35273.12	
			e) Overhead charges @ 0.25 on (a+b+c+d)				32024.28	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				16012.14	
			Cost for 15 cum = a+b+c+d+e+f				176133.54	
			Rate per cum = (a+b+c+d+e+f)/15				11742.24	
						say	***11742.00***	
							11742.00	
14.1D Case I		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 48 per cent of (a+b+c)		48.00		44555.52	
			e) Overhead charges @ 0.25 on (a+b+c+d)				34344.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				17172.44	
			Cost for 15 cum = a+b+c+d+e+f				188896.84	
			Rate per cum = (a+b+c+d+e+f)/15				12593.12	
						say	***12593.00***	
							12593.00	
14.1D Case I		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				92824.00	
			d) Formwork and staging 58 per cent of (a+b+c)		58.00		53837.92	
			e) Overhead charges @ 0.25 on (a+b+c+d)				36665.48	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				18332.74	
			Cost for 15 cum = a+b+c+d+e+f				201660.14	
			Rate per cum = (a+b+c+d+e+f)/15				13444.01	
						say	***13444.00***	
							13444.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.64	8939.12	452677.04	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			b) Labour					
			Mate	day	0.88	329.34	289.82	L-12
			Mason	day	3.00	352.86	1058.58	L-11
			Mazdoor	day	19.00	152.91	2905.21	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	Lead =3 km & P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**767201.00**			
			For formwork and staging add the following:					
14.1D Case II		**(i)**	**For solid slab super-structure, 18-28 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 18 per cent of (a+b+c)		18.00		138096.18	
			e) Overhead charges @ 0.25 on (a+b+c+d)				226324.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				113162.15	
			Cost for 120 cum = a+b+c+d+e+f				1244783.62	
			Rate per cum = (a+b+c+d+e+f)/120				10373.20	
						say	***10373.00***	
							10373.00	
14.1D Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		176456.23	
			e) Overhead charges @ 0.25 on (a+b+c+d)				235914.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				117957.15	
			Cost for 120 cum = a+b+c+d+e+f				1297528.69	
			Rate per cum = (a+b+c+d+e+f)/120				10812.74	
						say	***10813.00***	
							10813.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1D Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		214816.28	
			e) Overhead charges @ 0.25 on (a+b+c+d)				245504.32	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				122752.16	
			Cost for 120 cum = a+b+c+d+e+f				1350273.76	
			Rate per cum = (a+b+c+d+e+f)/120				11252.28	
						say	***11252.00***	
							11252.00	
14.1D Case II		**(ii)**	**For T-beam & slab, 23-33 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		176456.23	
			e) Overhead charges @ 0.25 on (a+b+c+d)				235914.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				117957.15	
			Cost for 120 cum = a+b+c+d+e+f				1297528.69	
			Rate per cum = (a+b+c+d+e+f)/120				10812.74	
						say	***10813.00***	
							10813.00	
14.1D Case II		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		214816.28	
			e) Overhead charges @ 0.25 on (a+b+c+d)				245504.32	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				122752.16	
			Cost for 120 cum = a+b+c+d+e+f				1350273.76	
			Rate per cum = (a+b+c+d+e+f)/120				11252.28	
						say	***11252.00***	
							11252.00	
14.1D Case II		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 33 per cent of (a+b+c)		33.00		253176.33	
			e) Overhead charges @ 0.25 on (a+b+c+d)				255094.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				127547.17	
			Cost for 120 cum = a+b+c+d+e+f				1403018.83	
			Rate per cum = (a+b+c+d+e+f)/120				11691.82	
						say	***11692.00***	
							11692.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1D Case II		**(iii)**	**For box girder and balanced cantilever, 38-58 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 38 per cent of (a+b+c)		38.00		291536.38	
			e) Overhead charges @ 0.25 on (a+b+c+d)				264684.35	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				132342.17	
			Cost for 120 cum = a+b+c+d+e+f				1455763.90	
			Rate per cum = (a+b+c+d+e+f)/120				12131.37	
						say	***12131.00***	
							12131.00	
14.1D Case II (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 48 per cent of (a+b+c)		48.00		368256.48	
			e) Overhead charges @ 0.25 on (a+b+c+d)				283864.37	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				141932.19	
			Cost for 120 cum = a+b+c+d+e+f				1561254.04	
			Rate per cum = (a+b+c+d+e+f)/120				13010.45	
						say	***13010.00***	
							13010.00	
14.1D Case II (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				767201.00	
			d) Formwork and staging 58 per cent of (a+b+c)		58.00		444976.58	
			e) Overhead charges @ 0.25 on (a+b+c+d)				303044.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				151522.20	
			Cost for 120 cum = a+b+c+d+e+f				1666744.17	
			Rate per cum = (a+b+c+d+e+f)/120				13889.53	
						say	***13890.00***	
							13890.00	
14.1		**E**	**PSC Grade M-40**					
		Case 1	**Using concrete mixer.**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.45	8939.12	57657.32	M-086
			Coarse sand	cum	6.75	1176.20	7939.35	M-005
			20 mm Aggregate	cum	8.10	1529.06	12385.39	M-053
			10 mm Aggregate	cum	5.40	1529.06	8256.92	M-051
			Admixture @ 0.4 per cent of cement	kg	25.80	166.73	4301.54	M-186
			b) Labour					
			Mate	day	0.96	329.34	316.16	L-12
			Mason	day	2.00	352.86	705.72	L-11
			Mazdoor	day	22.00	152.91	3363.93	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	237.59	1425.55	P&M-009
			Generator 33 KVA	hour	6.00	365.80	2194.79	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**98547.00**			
			For formwork and staging add the following:					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1E Case I		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98547.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		19709.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				29564.10	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				14782.05	
			Cost for 15 cum = a+b+c+d+e+f				162602.55	
			Rate per cum = (a+b+c+d+e+f)/15				10840.17	
						say	***10840.00***	
							10840.00	
14.1E Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98547.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		24636.75	
			e) Overhead charges @ 0.25 on (a+b+c+d)				30795.94	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				15397.97	
			Cost for 15 cum = a+b+c+d+e+f				169377.66	
			Rate per cum = (a+b+c+d+e+f)/15				11291.84	
						say	***11292.00***	
							11292.00	
14.1E Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98547.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		29564.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				32027.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				16013.89	
			Cost for 15 cum = a+b+c+d+e+f				176152.76	
			Rate per cum = (a+b+c+d+e+f)/15				11743.52	
						say	***11744.00***	
							11744.00	
14.1E Case I		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98547.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		24636.75	
			e) Overhead charges @ 0.25 on (a+b+c+d)				30795.94	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				15397.97	
			Cost for 15 cum = a+b+c+d+e+f				169377.66	
			Rate per cum = (a+b+c+d+e+f)/15				11291.84	
						say	***11292.00***	
							11292.00	
14.1E Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98547.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		29564.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				32027.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				16013.89	
			Cost for 15 cum = a+b+c+d+e+f				176152.76	
			Rate per cum = (a+b+c+d+e+f)/15				11743.52	
						say	***11744.00***	
							11744.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1E Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98547.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		34491.45	
			e) Overhead charges @ 0.25 on (a+b+c+d)				33259.61	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				16629.81	
			Cost for 15 cum = a+b+c+d+e+f				182927.87	
			Rate per cum = (a+b+c+d+e+f)/15				12195.19	
						say	***12195.00***	
							12195.00	
14.1E		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	51.60	8939.12	461258.59	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture @ 0.4 per cent of cement	kg	206.40	166.73	34412.32	M-186
			b) Labour					
			Mate	day	0.94	329.34	309.58	L-12
			Mason	day	3.50	352.86	1235.01	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	Lead =3 km & P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**810544.00**			
			For formwork and staging add the following:					
14.1E Case II		**(i)**	**For solid/voided slab super-structure, 18-28 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 18 per cent of (a+b+c)		18.00		145897.92	
			e) Overhead charges @ 0.25 on (a+b+c+d)				239110.48	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				119555.24	
			Cost for 15 cum = a+b+c+d+e+f				1315107.64	
			Rate per cum = (a+b+c+d+e+f)/120				10959.23	
						say	***10959.00***	
							10959.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1E Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		186425.12	
			e) Overhead charges @ 0.25 on (a+b+c+d)				249242.28	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				124621.14	
			Cost for 120 cum = a+b+c+d+e+f				1370832.54	
			Rate per cum = (a+b+c+d+e+f)/120				11423.60	
						say	***11424.00***	
							11424.00	
14.1E Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		226952.32	
			e) Overhead charges @ 0.25 on (a+b+c+d)				259374.08	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				129687.04	
			Cost for 120 cum = a+b+c+d+e+f				1426557.44	
			Rate per cum = (a+b+c+d+e+f)/120				11887.98	
						say	***11888.00***	
							11888.00	
14.1E Case II		**(ii)**	**For T-beam & slab incldluing launching of precast girders by launching truss upto 40 m, 23-33 per cent of cost of**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		186425.12	
			e) Overhead charges @ 0.25 on (a+b+c+d)				249242.28	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				124621.14	
			Cost for 120 cum = a+b+c+d+e+f				1370832.54	
			Rate per cum = (a+b+c+d+e+f)/120				11423.60	
						say	***11424.00***	
							11424.00	
14.1E Case II		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		226952.32	
			e) Overhead charges @ 0.25 on (a+b+c+d)				259374.08	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				129687.04	
			Cost for 120 cum = a+b+c+d+e+f				1426557.44	
			Rate per cum = (a+b+c+d+e+f)/120				11887.98	
						say	***11888.00***	
							11888.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1E Case II		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 33 per cent of (a+b+c)		33.00		267479.52	
			e) Overhead charges @ 0.25 on (a+b+c+d)				269505.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				134752.94	
			Cost for 120 cum = a+b+c+d+e+f				1482282.34	
			Rate per cum = (a+b+c+d+e+f)/120				12352.35	
						say	***12352.00***	
							12352.00	
14.1E Case II		**(iii)**	**For cast-in-situ box girder, segment construction and balanced cantilever, 38-58 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 38 per cent of (a+b+c)		38.00		308006.72	
			e) Overhead charges @ 0.25 on (a+b+c+d)				279637.68	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				139818.84	
			Cost for 120 cum = a+b+c+d+e+f				1538007.24	
			Rate per cum = (a+b+c+d+e+f)/120				12816.73	
						say	***12817.00***	
							12817.00	
14.1E Case II (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 48 per cent of (a+b+c)		48.00		389061.12	
			e) Overhead charges @ 0.25 on (a+b+c+d)				299901.28	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				149950.64	
			Cost for 120 cum = a+b+c+d+e+f				1649457.04	
			Rate per cum = (a+b+c+d+e+f)/120				13745.48	
						say	***13745.00***	
							13745.00	
14.1E Case II (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				810544.00	
			d) Formwork and staging 58 per cent of (a+b+c)		58.00		470115.52	
			e) Overhead charges @ 0.25 on (a+b+c+d)				320164.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				160082.44	
			Cost for 120 cum = a+b+c+d+e+f				1760906.84	
			Rate per cum = (a+b+c+d+e+f)/120				14674.22	
						say	***14674.00***	
							14674.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1F		**F**	**PSC Grade M-45**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	55.80	8939.12	498802.90	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture @ 0.4 per cent of cement	kg	223.20	166.73	37213.32	M-186
			b) Labour					
			Mate	day	0.94	329.34	309.58	L-12
			Mason	day	3.50	352.86	1235.01	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	Lead =3 km & P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**850889.00**			
			For formwork and staging add the following:					
14.1F		**(i)**	**For solid slab/voided slab super-structure, 16-26 per cent of cost of concrete (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 16 per cent of (a+b+c)		16.00		136142.24	
			e) Overhead charges @ 0.25 on (a+b+c+d)				246757.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				123378.91	
			Cost for 120 cum = a+b+c+d+e+f				1357167.96	
			Rate per cum = (a+b+c+d+e+f)/120				11309.73	
						say	***11310.00***	
							11310.00	
14.1F (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 21 per cent of (a+b+c)		21.00		178686.69	
			e) Overhead charges @ 0.25 on (a+b+c+d)				257393.92	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				128696.96	
			Cost for 120 cum = a+b+c+d+e+f				1415666.57	
			Rate per cum = (a+b+c+d+e+f)/120				11797.22	
						say	***11797.00***	
							11797.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1F (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 26 per cent of (a+b+c)		26.00		221231.14	
			e) Overhead charges @ 0.25 on (a+b+c+d)				268030.04	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				134015.02	
			Cost for 120 cum = a+b+c+d+e+f				1474165.19	
			Rate per cum = (a+b+c+d+e+f)/120				12284.71	
						say	***12285.00***	
							12285.00	
14.1F		**(ii)**	**For T-beam & slab including launching of precast girders by launching truss upto 40 m span, 21-31 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 21 per cent of (a+b+c)		21.00		178686.69	
			e) Overhead charges @ 0.25 on (a+b+c+d)				257393.92	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				128696.96	
			Cost for 120 cum = a+b+c+d+e+f				1415666.57	
			Rate per cum = (a+b+c+d+e+f)/120				11797.22	
						say	***11797.00***	
							11797.00	
14.1F (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 26 per cent of (a+b+c)		26.00		221231.14	
			e) Overhead charges @ 0.25 on (a+b+c+d)				268030.04	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				134015.02	
			Cost for 120 cum = a+b+c+d+e+f				1474165.19	
			Rate per cum = (a+b+c+d+e+f)/120				12284.71	
						say	***12285.00***	
							12285.00	
14.1F (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 31 per cent of (a+b+c)		31.00		263775.59	
			e) Overhead charges @ 0.25 on (a+b+c+d)				278666.15	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				139333.07	
			Cost for 120 cum = a+b+c+d+e+f				1532663.81	
			Rate per cum = (a+b+c+d+e+f)/120				12772.20	
						say	***12772.00***	
							12772.00	
14.1F		**(iii)**	**For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 36 per cent of (a+b+c)		36.00		306320.04	
			e) Overhead charges @ 0.25 on (a+b+c+d)				289302.26	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				144651.13	
			Cost for 120 cum = a+b+c+d+e+f				1591162.43	
			Rate per cum = (a+b+c+d+e+f)/120				13259.69	
						say	***13260.00***	
							13260.00	

C.E. TECHNO CO. PVT. LTD. KOLKATA 700 092 12MA, N.S.C. BOSE ROAD

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1F (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 46 per cent of (a+b+c)		46.00		391408.94	
			e) Overhead charges @ 0.25 on (a+b+c+d)				310574.49	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				155287.24	
			Cost for 120 cum = a+b+c+d+e+f				1708159.67	
			Rate per cum = (a+b+c+d+e+f)/120				14234.66	
						say	***14235.00***	
							14235.00	
14.1F (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				850889.00	
			d) Formwork and staging 56 per cent of (a+b+c)		56.00		476497.84	
			e) Overhead charges @ 0.25 on (a+b+c+d)				331846.71	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				165923.36	
			Cost for 120 cum = a+b+c+d+e+f				1825156.91	
			Rate per cum = (a+b+c+d+e+f)/120				15209.64	
						say	***15210.00***	
							15210.00	
14.1		**G**	**PSC Grade M-50**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	58.80	8939.12	525620.26	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture @ 0.4 per cent of cement	kg	235.20	166.73	39214.04	M-186
			b) Labour					
			Mate	day	0.94	329.34	309.58	L-12
			Mason	day	3.50	352.86	1235.01	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	Lead =3 km & P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**879707.00**			

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			For formwork and staging add the following:					
14.1G		**(i)**	**For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55 per cent of cost of concrete**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				879707.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		307897.45	
			e) Overhead charges @ 0.25 on (a+b+c+d)				296901.11	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				148450.56	
			Cost for 120 cum = a+b+c+d+e+f				1632956.12	
			Rate per cum = (a+b+c+d+e+f)/120				13607.97	
						say	***13608.00***	
							13608.00	
14.1G (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				879707.00	
			d) Formwork and staging 45 per cent of (a+b+c)		45.00		395868.15	
			e) Overhead charges @ 0.25 on (a+b+c+d)				318893.79	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				159446.89	
			Cost for 120 cum = a+b+c+d+e+f				1753915.83	
			Rate per cum = (a+b+c+d+e+f)/120				14615.97	
						say	***14616.00***	
							14616.00	
14.1G (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				879707.00	
			d) Formwork and staging 55 per cent of (a+b+c)		55.00		483838.85	
			e) Overhead charges @ 0.25 on (a+b+c+d)				340886.46	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				170443.23	
			Cost for 120 cum = a+b+c+d+e+f				1874875.54	
			Rate per cum = (a+b+c+d+e+f)/120				15623.96	
						say	***15624.00***	
							15624.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1		**H**	**PSC Grade M- 55**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	63.50	8939.12	567634.12	M-086
			Coarse sand	cum	54.00	1176.20	63514.80	M-004
			20 mm Aggregate	cum	64.80	1529.06	99083.09	M-053
			10 mm Aggregate	cum	43.20	1529.06	66055.39	M-051
			Admixture @ 0.4 per cent of cement	kg	254.00	166.73	42348.49	M-186
			b) Labour					
			Mate	day	0.94	329.34	309.58	L-12
			Mason	day	3.50	352.86	1235.01	L-11
			Mazdoor	day	20.00	152.91	3058.12	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2301.82	13810.94	P&M-002
			Generator 100 KVA	hour	6.00	730.42	4382.52	P&M-080
			Loader	hour	6.00	803.34	4820.07	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	973.89	14608.40	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	47.05	42343.20	Lead =3 km & P&M-050
			Concrete Pump	hour	6.00	275.23	1651.38	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**924856.00**			
			For formwork and staging add the following:					
14.1H		**(i)**	**For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55 per cent of cost of concrete**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				924856.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		323699.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				312138.90	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				156069.45	
			Cost for 120 cum = a+b+c+d+e+f				1716763.95	
			Rate per cum = (a+b+c+d+e+f)/120				14306.37	
						say	***14306.00***	
							14306.00	
14.1H (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				924856.00	
			d) Formwork and staging 45 per cent of (a+b+c)		45.00		416185.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				335260.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				167630.15	
			Cost for 120 cum = a+b+c+d+e+f				1843931.65	
			Rate per cum = (a+b+c+d+e+f)/120				15366.10	
						say	***15366.00***	
							15366.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1H (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				924856.00	
			d) Formwork and staging 55 per cent of (a+b+c)		55.00		508670.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				358381.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				179190.85	
			Cost for 120 cum = a+b+c+d+e+f				1971099.35	
			Rate per cum = (a+b+c+d+e+f)/120				16425.83	
						say	***16426.00***	
							16426.00	
		Note	1.Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers conforming IS: 9103 @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
			2. Cement provided for various components of the super structure is for estimating purpose only. Actual quantity of cement will be as per approved mix design. Similarly, the provision for coarse and fine aggregates is for estimating purpose and the exact quantity shall be as per the mix design.					
			3. The items like needle and surface vibrators are part of minor T & P which is already covered under the overhead charges. As such these items have not been added separately in the rate analysis.					
14.2	**1600**		**Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			HYSD bars including 5 per cent for laps and wastage	tonne	1.05	44000.00	46200.00	M-087
			Binding wire	Kg	8.00	92.63	741.01	M-071
			b) Labour for cutting, bending, tying and placing in position					
			Mate	day	0.44	329.34	144.91	L-12
			Blacksmith	day	3.00	352.86	1058.58	L-02
			Mazdoor	day	8.00	152.91	1223.25	L-13
			Basic Cost of Labour & Material (a+b)		**49368.00**			
			c) Overhead charges @ 0.25 on (a+b)				12341.94	
			d) Contractor's profit @ 0.1 on (a+b+c)				6170.97	
			Rate per MT = a+b+c+d				67880.65	
						say	***67881.00***	
							67881.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.3	**1800**		**High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications**					
			Unit = 1 MT					
			Taking output = 0.377 MT					
			Details of cost for 12T13 strand 40 m long cable (weight = 0.377 MT)					
			a) Material					
			H.T. Strand @ 9.42 kg/m including 2 per cent for wastage and extra length for jacking	tonne	0.385	148201.20	57057.46	M-125
			Sheathing duct ID 66 mm along with 5 per cent extra length 40 x 1.05 = 42 m.	metre	42.00	99.98	4199.03	M-170
			Tube anchorage set complete with bearing plate, permanent wedges etc	each	2.00	2099.52	4199.03	M-193
			Cement for grouting including 3 per cent wastage @ 3.00 kg/m = 3 x 1.03 x 40 = 123.60 kg (say, = 125 kg)	tonne	0.125	8939.12	1117.39	M-086
			Add 0.50 per cent cost of material for Spacers, Insulation tape and miscellaneous items				332.86	
			b) Labour					
			i) For making and fixing cables, anchorages					
			Mate	day	0.16	329.34	52.69	L-12
			Blacksmith	day	1.00	352.86	352.86	L-02
			Mazdoor	day	3.00	152.91	458.72	L-13
			ii) For prestressing					
			Mate/Supervisor	day	0.05	329.34	16.47	L-12
			Prestressing operator / Fitter	day	0.25	235.24	58.81	L-08
			Mazdoor	day	1.00	152.91	152.91	L-13
			iii) For grouting					
			Mate/Supervisor	day	0.05	329.34	16.47	L-12
			Mason	day	0.25	352.86	88.22	L-11
			Mazdoor	day	1.00	152.91	152.91	L-13
			c) Machinery					
			Stressing jack with pump	hour	2.50	132.91	332.28	P&M-040
			Grouting pump with agitator	hour	1.00	419.90	419.90	M-117
			Generator 33 KVA.	hour	3.50	365.80	1280.29	P&M-079
			d) Overhead charges @ 0.25 on (a+b+c)				17572.08	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				8786.04	
			Cost for 0.377 MT (a+b+c+d+e)				96646.41	
			Rate per MT = (a+b+c+d+e)/0.377				256356.53	
						say	***256357.00***	
							256357.00	
		Note	Cost of HT steel has been taken for delivery at site. Hence carriage has not been considered.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.4	**2702**		**Providing and laying Cement concrete wearing coat M-30 grade including reinforcement complete as per drawing and Technical Specifications**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Cement concrete M30 Grade Refer relevant item of concrete in Item 14.1 excluding formwork	cum	1.00	6261.00	6261.00	Item 14.1(C)
			HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.075	49368.00	3702.60	Item 14.2 A
			b) Labour					DIR used item
			Mazdoor for cleaning deck slab concrete surface.	day	0.15	152.91	22.94	L-13
			c) Overhead charges @ 0.25 on (a+b)				2496.63	
			d) Contractor's profit @ 0.1 on (a+b+c)				1248.32	
			Rate per cum (a+b+c+d)				13731.49	
						say	***13731.00***	
							13731.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.5	515 &		**Mastic Asphalt**					
			Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope 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 515.					
			Unit = sqm					
			Taking output = 72.46 sqm (2 tonnes)(0.869 cum) assuming a density of 2.3 tonnes/cum.					
			a) Labour					
			Mate	day	0.49	329.34	161.37	L-12
			Mazdoor	day	11.00	152.91	1681.97	L-13
			Mazdoor (Skilled)	day	1.25	244.65	305.81	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	0.06	396.38	23.78	P&M-031
			Air compressor 250 cfm	hour	0.06	334.04	20.04	P&M-001
			Mastic cooker 1 tonne capacity	hour	6.00	65.87	395.20	P&M-030
			Bitumen boiler 1500 litres capacity	hour	6.00	209.36	1256.18	P&M-005
			Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.00	379.91	379.91	P&M-053
			c) Material					
			Base mastic (without coarse aggregates) = 60 per cent					
			Coarse aggregate(3.35mm to 9.5 mm size) = 40 per cent .					
			Proportion of material required for mastic asphalt with coarse aggregates (based on mix design done by CRRI for a specific case)					
			i) Bitumen 80/100 or 60/70 @ 10.2 per cent by weight of mix. 2 x 10.2/100 = 0.204	tonne	0.204	40000.00	8160.00	M-073
			ii) Crusher stone dust @ 31.9 per cent by weight of mix = 2 x 31.9/100 = 0.638 tonnes = 0.638/1.625 = 0.39	cum	0.39	470.48	183.49	M-021
			iii) Lime stone dust filler with calcium carbonate content not less than 80 per cent by weight @ 17.92 per cent by weight of mix = 2 x 17.92/100 = 0.36	tonne	0.36	9571.33	3445.68	M-194
			iv) Coarse aggregates 9.5 mm to 3.35 mm size @ 40 per cent by weight of mix = 2 x 40/100 = 0.8 MT = 0.8/1.456 = 0.55	cum	0.55	1529.06	840.98	M-051
			v) Pre-coated stone chips of 9.5 mm nominal size for skid resistance = 72.46x0.005/10 = 0.036	cum	0.036	8027.57	288.99	M-148
			vi) Bitumen for coating of chips @ 2 per cent by weight = 0.036 x 1.456 x 2/100 = 0.001048MT = 1.05kg	kg	1.05	40.00	42.00	M-073/1000
			d) Overhead charges @ 0.25 on (a+b+c)				4296.35	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2148.18	
			Cost for 72.46 sqm = a+b+c+d+e				23629.95	
			Rate per sqm = (a+b+c+d+e)/72.46				326.11	
						say	***326.00***	
							326.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	**1.**The rates for 6 mm or any other thickness may be worked out on pro-rata basis.					
			2. Where tack coat is required to be provided before laying mastic asphalt, the same is required to be measured and paid separately.					
			3.The quantities of binder, filler and aggregates are for estimating purpose. Exact quantities shall be as per mix design.					
			4.This rate analysis is based on design made by CRRI for a specific case and is meant for estimating purposes only. Actual design is required to be done for each case.					
			5.The quantity of bitumen works out 17 per cent of the mastic asphalt blocks without aggregates and falls within the standards laid down by MoRTH Specifications.					
14.6	**2703, 1500, 1600 & 1700**		**Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.**					
			Unit = 1 RM					
			Taking output = 2 x 24 m span = 48 m					
			a) Material					
			i) M30 Grade Reinforced Cement Concrete	cum	4.092	6261.00	25620.01	Item 14.1(C)
			No. of vertical posts = (12 + 2)2 = 28 Nos., External area of vertical post 0.25x0.275 = 0.069sqm, Concrete in Vertical posts = 0.069 x 28 = 1.932 cum, Hand rail in 3 tiers = 3 x 24 = 72 m, External area = 0.170 x 0.175 = 0.03 sqm, Concrete in hand rails = 0.03 x 72 = 2.16 cum, Total Concrete = 1.932 + 2.16 = 4.092 cum. (Refer MoRTH SD / 202).					DIR used item
			Add 5 per cent of above cost for form work for casting in casting yard.				1281.00	
			ii) HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.865	49368.00	42703.32	Item 14.2 A
			Refer MoRTH SD / 202.					DIR used item
			Add 5 per cent of (a) for handling and fixing of precast panels in position				3480.22	
			b) Overhead charges @ 0.25 on (a)				18271.14	
			c) Contractor's profit @ 0.1 on (a+b)				9135.57	
			Rate for 48 m (a+b+c)				100491.26	
			Rate per metre (a+b+c)/48				2093.57	
						say	***2094.00***	
							2094.00	
		Note	1.Quantities of material have been adopted from standard plans of MoRTH vide drawing no. SD/202.					
			2.48 m length is the total linear length adding both sides of 24 m span.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.7	**2703, 1500, 1600 & 1700**		**Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.**					
			Unit = 1 RM					
			Taking output = 2 x 24 m span = 48 m.					
			a) Material					
			i) M30 Grade Reinforced Cement Concrete	cum	4.092	6261.00	25620.01	Item 14.1(C)
			No. of vertical posts = (12 + 2)2 = 28 Nos., External area of vertical post 0.25x0.275 = 0.069sqm, Concrete in vehicle posts = 0.069 x 28 = 1.932 cum, Hand rail in 3 tiers = 3 x 24 = 72 m, External area = 0.170 x 0.175 = 0.03 sqm, Concrete in hand rails = 0.03 x 72 = 2.16 cum, Total Concrete = 1.932 + 2.16 = 4.092 cum. (Refer MoRTH SD / 202).					
			Add 12 per cent of above cost for form work.				3074.40	
			ii) HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.865	49368.00	42703.32	Item 14.2 A
			refer MoRTH SD / 202.					
			b) Overhead charges @ 0.25 on (a)				17849.43	
			c) Contractor's profit @ 0.1 on (a+b)				8924.72	
			Rate for 48 m (a+b+c)				98171.88	
			Rate per metre (a+b+c)/48				2045.25	
						say	***2045.00***	
							2045.00	
		Note	**1.** Quantities of material have been adopted from standard plans of MoRTH vide drawing no. SD/202.					
			2. 48 m length is the total linear length adding both sides of 24 m span.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.8	**2703.2 & 1900**		**Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specification**					
			Unit = 1 RM					
			Taking output = 2 x 50 m span = 100 m					
			a) Material:					
			1) ISMC 100 = 2.806 x 1.05 = 2.946 MT	tonne	2.946	60000.00	176760.00	M-185
			2) MS Flat = 0.964 x 1.05 = 1.012 MT	tonne	1.012	60000.00	60720.00	M-185
			3) MS bars = 0.17 x 1.05 = 0.180 MT	tonne	0.18	60000.00	10800.00	M-185
			4) MS bolts, nuts and washers	tonne	0.15	87685.71	13152.86	M-136*1000
			Add @ 5 per cent of cost of material for painting one shop coat with red oxide primer and three coats of synthetic enamel paint and consumables to safeguard against weathering and corrosion.				13071.64	
			Add for cost of concrete for fixing vertical posts in the performed recess @ 1 per cent of cost of material.				2614.33	
			Add for electricity charges, welding and drilling equipment, electrodes and other consumables @ 1 per cent of cost of material.				2614.33	
			b) Labour					
			Mate	day	2.80	329.34	922.14	L-12
			Mazdoor (Skilled)	day	30.00	244.65	7339.49	L-15
			Mazdoor	day	40.00	152.91	6116.24	L-13
			c) Overhead charges @ 0.25 on (a+b)				73527.76	
			d) Contractor's profit @ 0.1 on (a+b+c)				36763.88	
			Cost for 100 m steel railing = a+b+c+d				404402.66	
			Rate per metre (a+b+c+d)/100				4044.03	
						say	***4044.00***	
							4044.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.9	2705		**Drainage Spouts complete as per drawing and Technical specification**					
			Unit = 1 No.					
			Taking output = 1 No.					
			a) Material					
			Corrosion resistant Structural steel including 5 per cent wastage	Kg	4.00	65.21	260.83	M-094/1000
			GI pipe 100mm dia	metre	6.00	1210.31	7261.86	M-056
			GI bolt 10 mm Dia	each	6.00	14.82	88.92	M-116
			Galvanised MS flat clamp	each	2.00	494.00	988.01	M-107
			b) Labour					
			For fabrication					
			Mate	day	0.02	329.34	6.59	L-12
			Skilled (Blacksmith, welder etc.)	day	0.02	352.86	7.06	L-02
			Mazdoor	day	0.02	152.91	3.06	L-13
			For fixing in position					
			Mate	day	0.01	329.34	3.29	L-12
			Mason	day	0.01	352.86	3.53	L-11
			Mazdoor	day	0.20	152.91	30.58	L-13
			Add @ 5 per cent of cost of material and labour for electrodes, cutting gas, sealant, anti-corrosive bituminous paint, mild steel grating etc.				432.69	
			c) Overhead charges @ 0.25 on (a+b)				2271.60	
			d) Contractor's profit @ 0.1 on (a+b+c)				1135.80	
			Rate per metre (a+b+c+d)				12493.82	
						say	***12494.00***	
							12494.00	
		Note	**1.** In case of viaducts in urban areas, the drainage spouts should be connected with suitably located pipelines to discharge the surface run-off to drains provided at ground level.					
			2. In case of bridges, sufficient length of G.I Pipe shall be provided to ensure that there is no splashing of water from the drainage spout on the structure.					
14.10	2700		**PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification**					
			Unit = 1 cum					
			Taking output = 1 cum					
			Material					
			Concrete, Rate as per item No. 12.8 (A) excluding formworks	cum	1.00	6736.00	6736.00	Item 12.8 (A)
			Rate per cum			***say***	***6736.00***	
							6736.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.11	**1500,1600,1700 & 2704**		**Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Cement concreteM30 Grade Refer relevant item of concrete in item 12.8(G)by using batching plant, excluding formwork i.e. per cum basic cost (a+b+c) (Excluding OH & CP)	cum	1.00	6255.00	6255.00	Item 12.8 (G)
			(Refer relevant item of concrete in item No. 13.8 (G) except that form work may be added at the rate of 2 per cent of cost against 3.5 per cent provided in the foundation concrete.				125.10	
			HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.05	49368.00	2468.40	Item 14.2 A
			b) Overhead charges @ 0.25 on (a)				2212.13	
			c) Contractor's profit @ 0.1 on(a+b)				1106.06	
			Rate per cum (a+b+c)				12166.69	
						say	***12167.00***	
							12167.00	
		Note	The grade of reinforced cement concrete may be adopted as M30 for severe conditions and M25 for moderate conditions.					
14.18	**2605**		**Filler joint**					
		(i)	**Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.**					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Cutting, bending, carrying & fixing etc.					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor	day	0.50	152.91	76.45	L-13
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			b) Material					
			Copper plate - 12m long x 250 mm wide	kg	55.00	314.93	17321.02	M-093
			Area = 12 x 0.25 = 3 sqm					
			Weight = 3 x 0.002 x 8900 = 53.4 kg					
			Wastage @ 2.5 per cent = 1.33 kg/54.73 kg say = 55 kg.					
			c) Overhead charges @ 0.25 on (a+b)				4383.24	
			d) Contractor's profit @ 0.1 on (a+b+c)				2191.62	
			Cost for 12 m = (a+b+c+d)				24107.83	
			Rate per m = (a+b+c+d)/12				2008.99	
						say	***2009.00***	
							2009.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.18		**(ii)**	**Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.**					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			For carrying, placing & fixing.					
			Mate	day	0.01	329.34	2.63	L-12
			Mazdoor	day	0.10	152.91	15.29	L-13
			Mazdoor (Skilled)	day	0.10	244.65	24.46	L-15
			b) Material					
			20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	3.00	1976.02	5928.05	M-091
			Area = 12 x 0.25 = 3 sqm					
			c) Overhead charges @ 0.25 on (a+b)				1492.61	
			d) Contractor's profit @ 0.1 on (a+b+c)				746.30	
			Cost for 12 m = (a+b+c+d)				8209.35	
			Rate per m = (a+b+c+d)/12				684.11	
						say	***684.00***	
							684.00	
14.18		**(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.**					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.01	329.34	3.29	L-12
			Mazdoor	day	0.20	152.91	30.58	L-13
			Mazdoor (Skilled)	day	0.10	244.65	24.46	L-15
			b) Material					
			Premoulded joint filler 12 m long,20 mm thick and 300 mm deep.	sqm	3.60	926.26	3334.53	M-147
			c) Overhead charges @ 0.25 on (a+b)				848.22	
			d) Contractor's profit @ 0.1 on (a+b+c)				424.11	
			Cost for 12 m = (a+b+c+d)				4665.19	
			Rate per m = (a+b+c+d)/12				388.77	
						say	***389.00***	
							389.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.18		**(iv)**	**Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6 per cent bitumen by weight**					
			Unit = Running meter					
			Taking output = 12 m					
			12m long x 100 mm wide x 10mm deep recess					
			a) Labour					
			Mate	day	0.02	329.34	6.59	L-12
			Mazdoor	day	0.50	152.91	76.45	L-13
			Mazdoor (Skilled)	day	0.10	244.65	24.46	L-15
			b) Material					
			Sand	cum	0.012	1176.20	14.11	M-005
			Volume 12 x 0.1 x 0.01 = 0.012 cum					
			Weight 0.012 x 1400 = 16.8kg					
			Bitumen	cum	0.001	40000.00	40.00	M-073
			16.8 x 0.06 = 1 kg					
			c) Overhead charges @ 0.25 on (a+b)				40.40	
			d) Contractor's profit @ 0.1 on (a+b+c)				20.20	
			Cost for 12 m = (a+b+c+d)				222.23	
			Rate per m = (a+b+c+d)/12				18.52	
						say	***18.50***	
							19.00	
		Note	For arriving at the final rate of filler joints per m					
			length and per cm depth of joint filling compound,					
			the rates at Sl. No. i), ii), iii) & iv) shall be added					
14.22	**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.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.05	329.34	16.47	L-12
			Mazdoor	day	1.00	152.91	152.91	L-13
			Mazdoor (Skilled)	day	0.25	244.65	61.16	L-15
			b) Material					
			Supply of complete assembly of strip seal expansion joint comprising of edge beams, anchorage, strip seal element and complete accessories as per approved specifications and drawings.	metre	12.00	9997.70	119972.40	M-184
			Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				6010.15	
			c) Overhead charges @ 0.25 on (a+b)				31553.27	
			d) Contractor's profit @ 0.1 on (a+b+c)				15776.64	
			Cost for 12 m = (a+b+c+d)				173542.99	
			Rate per m = (a+b+c+d)/12				14461.92	
						say	***14462.00***	
							14462.00	
		Note	**1.** The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
Non-Sch	Rate Analysis performed on basis of sample analysis published in "Guidebook for Fabrication & Erection of Steel Structures" by Alok Baishya, BE(Civil), MBA and published by Institute for Steel Development & Growth (INSDAG)		**Supply, fabrication, delivery at bridge site and erection of structural steel works as per IS 2062, including two coats of primer, one at shop and the other at site and two coats of aluminium paints including all labour, material, consumables etc.**					
			Unit =1MT					
			Taking output = 1MT					
			a) Material					
			Structural Steel	tonne	1.05	60000.00	63000.00	
			Permanent Bolts of tested quality	kg	7.00	87.69	613.80	
			Electrode (@10 kg of weld metal (approx 275 nos. of 4mm electrode / ton of fabrication)	nos.	275.00	7.42	2040.50	
			Electrode (@2 kg of weld metal (approx 275 nos. of 4mm electrode / ton of erection)	nos.	50.00	7.42	371.00	
			DA Gas for fabrication	cum	2.00	583.00	1166.00	
			DA Gas for erection	cum	0.50	583.00	291.50	
			Oxygen for fabrication	cum	6.00	100.70	604.20	
			Oxygen for erection	cum	1.50	100.70	151.05	
			Red Lead Primer for fabrication	l	1.50	127.20	190.80	
			Red Lead Primer for erection	l	1.00	127.20	127.20	
			Paint	l	2.00	185.25	370.50	
			Service bolts for erection	kg	7.00	87.69	613.80	
			b) Labour					
			Marker for fabrication	day	0.60	244.65	146.79	
			Fitter-I for fabrication	day	0.90	235.24	211.72	
			Gas Cutter for fabrication	day	0.90	244.65	220.18	
			Hammer man	day	0.30	152.91	45.87	
			Welder-I for fabrication	day	1.50	244.65	366.97	
			Foreman for fabrication	day	0.90	176.43	158.79	
			Grinder for fabrication	day	0.90	244.65	220.18	
			Work Supervisor for fabrication	day	0.30	329.34	98.80	
			Unskilled for fabrication	day	6.00	152.91	917.44	
			Painter for fabrication	day	1.52	352.86	536.35	
			Painter for erection	day	5.05	352.86	1781.94	
			Sarang for erection	day	1.00	244.65	244.65	
			Riggers for erection	day	8.00	176.43	1411.44	
			Welder for erection	day	1.00	244.65	244.65	
			Gas Cutter for erection	day	1.00	244.65	244.65	
			Fitter for erection	day	1.00	235.24	235.24	
			Semi skilled for erection	day	3.00	176.43	529.29	
			c) Machinery					
			Welding machine, grinding machine for fabrication	LS		742.00	742.00	
			Tools, Zigs and fixtures for fabrication	LS		212.00	212.00	
			Crane, inch, Welding generator, rectifier, transformer, etc. for erection	LS		742.00	742.00	
			Tools, tackles, safety appliances, etc for erection	LS		212.00	212.00	
			d)Overheads @ 0.25 on (a+b+c)				**19765.83**	
			e)Contractor's profit @ 0.1 on (a+b+c+d)				**9882.91**	
			Rate for per MT (a+b+c+d+e)				**108712.05**	
						say	**108712.00**	

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CHAPTER - 15
RIVER TRAINING AND PROTECTION WORKS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
15.1	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.**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.00	858.63	858.63	M-003
			Stone Spalls	cum	0.20	969.66	193.93	M-008
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mason	day	0.35	352.86	123.50	L-11
			Mazdoor *	day	0.75	152.91	114.68	L-13
			c) Overhead charges @ 0.25 on (a+b)				325.98	
			d) Contractor's profit @ 0.1 on (a+b+c)				162.99	
			Rate per cum = (a+b+c+d)				1792.88	
						say	***1793.00***	
							1793.00	
		*	Including excavation for trimming for preparation of bed.					
		Note	Nominal excavation required for preparation of bed has been taken into account while making provision for labour.					
15.2	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 per cent extra for laps and joints laid with stone boulders weighing not less than 40 kg each.					
			Unit = cum					
			Taking output = 3 mx1.5mx1.25m = 5.63 cum					
			a) Material					
			4mm GI wire crates woven in mesh size of 100 mm x 100 mm.	sqm	22.00	355.07	7811.57	M-108
			Stone	cum	5.63	858.63	4834.06	M-003
			Stone Spalls	cum	1.13	969.66	1095.71	M-008
			b) Labour					
			Mate	day	0.18	329.34	59.28	L-12
			Mazdoor (Skilled)	day	1.50	244.65	366.97	L-15
			Mazdoor	day	*3.00	152.91	458.7	L-13
			c) Overhead charges @ 0.25 on (a+b)				3656.6	
			d) Contractor's profit @ 0.1 on (a+b+c)				1828.29	
			Cost for 5.63 cum = a+b+c+d				20111.19	
			Rate per cum = (a+b+c+d)/5.63				3572.15	
						say	***3572.00***	
							3572.00	
		*	Including excavation for trimming for preparation of bed.					
		Note	Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
15.3	**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.					
			Unit = cum					
			Taking out put = 1 cum					
			Concrete Grade M15 Rate as per item No. 12.8 (A) including OH & CP	cum	1.00	7004.00	7004.00	Item 12.8 (A)
			Add 2 per cent of cost to account for excavation for preparation of bed, nominal surface reinforcement and filling of granular material in recesses between blocks.				140.08	
			Rate per cum				7144.08	
						say	***7144.00***	
							7144.00	
15.4	**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**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone weighing not less than 40kg	cum	1.00	858.63	858.63	M-003
			Stone spalls of minimum 25 mm size	cum	0.20	969.66	193.93	M-008
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mason	day	0.35	352.86	123.50	L-11
			Mazdoor	day	0.75	152.91	114.68	L-13
			c) Overhead charges @ 0.25 on (a+b)				325.98	
			d) Contractor's profit @ 0.1 on (a+b+c)				162.99	
			Rate per cum = (a+b+c+d)				1792.88	
						say	***1793.00***	
							1793.00	
15.4		**B**	**Cement Concrete Blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15**					
			Unit = cum					
			Taking output = 1 cum					
			Concrete Grade M15 Rate as per item No. 12.8 (A)	cum	1.00	7004.00	7004.00	Item 12.8 (A)
			Add 2 per cent of cost to account for nominal surface reinforcement and filling of granular material in recesses between blocks.				140.08	
			Rate per cum				7144.08	
						say	***7144.00***	
							7144.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
15.5	**2504**		**Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Graded stone aggregate of required size	cum	1.20	1190.60	1428.72	M-012
			b) Labour					
			Mate	day	0.05	329.34	16.47	L-12
			Mazdoor (Skilled)	day	0.25	244.65	61.16	L-15
			Mazdoor *	day	1.00	152.91	152.91	L-13
			c) Overhead charges @ 0.25 on (a+b)				414.81	
			d) Contractor's profit @ 0.1 on (a+b+c)				207.41	
			Rate per cum = (a+b+c+d)				2281.47	
						say	***2281.00***	
							2281.00	
			Includes Mazdoor required for trimming of slope to proper profile and preparation of bed.					
15.6	**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.					
			Unit = sqm					
			Taking output = 10 sqm.					
			a) Labour					
			Mate	day	0.02	329.34	6.59	L-12
			Mazdoor	day	0.30	152.91	45.87	L-13
			Mazdoor (Skilled)	day	0.10	244.65	24.46	L-15
			b) Material					
			Permeable synthetic geotextile including 5 per cent for overlap and wastage	sqm	11.00	446.37	4910.05	M-187
			c) Overhead charges @ 0.25 on (a+b)				1246.74	
			d) Contractor's profit @ 0.1 on (a+b+c)				623.37	
			Cost for 10 sqm = a+b+c+d				6857.08	
			Rate per sqm = (a+b+c+d)/10				685.71	
						say	***686.00***	
							686.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
15.7	**2504.4**		**Toe protection**					
			A toe wall for toe protection can either be in dry rubble masonry in case of dry rubble pitching or pitching with stones in wire crates or it can be in PCC M15 nominal mix if cement concert block have been used for pitching . Rates for toe wall can be adopted from respective clauses depending upon approved design. The rate for excavation for foundation, dry rubble masonry and PCC M15 have been analysed and given in respective chapters.					
15.8	**2505**		**Providing and laying Flooring complete as per drawing and Technical specifications laid over cement concert bedding.**					
		A	**Rubble stone laid in cement mortar 1:3**					
			Unit = cum					
			Taking output = 1 cum					
			a) Cement mortor 1:3 (Rate as in Item 12.6 sub-analysis) excluding OH & CP	cum	0.33	5945.00	1961.85	Item 12.6 (A)
			b) Add for cement concrete bedding (M15 Nominal mix) vide Item 12.8 (A) excluding OH & CP . Quantity shall be adopted as per design (Assume Rubble stone Flooring thickness 300mm and cement concrete bedding thickness 100mm)	cum	0.33	4899.00	1616.67	Item 12.8 (A)
			Add 1 per cent of cost to account for excavation for preparation of bed.				35.79	
			c) Material					
			Stone	cum	1.00	858.63	858.63	M-003
			Stone Spalls	cum	0.20	969.66	193.93	M-008
			d) Labour					
			Mate	day	0.08	329.34	26.35	L-12
			Mason	day	0.50	352.86	176.43	L-11
			Mazdoor (for laying stones, filling of quarry spalls)	day	1.50	152.91	229.36	L-13
			e) Overhead charges @ 0.25 on (a+c+d)				861.64	
			f) Contractor's profit @ 0.1 on (a+c+d+e)				430.82	
			Rate per cum = (a+b+c+d+e+f)				6391.45	
						say	***6391.00***	
							6391.00	
		*	Includes cement mortar for laying and filling of joints.					
15.8		**B**	**Cement Concrete blocks Grade M15**					
			Concrete Grade M15 block. (Rate as per item No. 12.8 (A) including OH & CP.	cum	1.00	7004.00	7004.00	Item 12.8 (A)
			Add for cement concrete bedding (M15 Nominal mix) vide Item 12.8 (A) including OH & CP. Quantity shall be adopted as per design (Assume Cement Concrete blocks thickness 300mm and cement concrete bedding thickness 100mm)	cum	0.33	7004.00	2311.32	Item 12.8 (A)
			Add 1 per cent of cost to account for excavation for preparation of bed.				93.15	
			Rate per cum				9408.47	
						say	***9408.00***	
							9408.00	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
15.9	**2506**		**Dry Rubble Flooring**					
			Construction of dry rubble flooring at cross drainage works for relatively less important works.					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.00	858.63	858.63	M-003
			Stone Spalls	cum	0.20	969.66	193.93	M-008
			b) Labour					
			Mate	day	0.10	329.34	32.93	L-12
			Mason	day	0.50	352.86	176.43	L-11
			mazdoor	day	1.50	152.91	229.36	L-13
			Add 1 per cent of (b) for trimming and preparation of base.				4.39	
			c) Overhead charges @ 0.25 on (a+b)				373.92	
			d) Contractor's profit @ 0.1 on (a+b+c)				186.96	
			Rate per cum = (a+b+c+d)				2056.54	
						say	***2057.00***	
							2057.00	
15.10	**2507.2**		**Curtain wall complete as per drawing and Technical specification**					
		A	**Stone masonry in cement mortar (1:3)**					
			Coursed rubble masonry (1st sort)	cum	1.00	5309.00	5309.00	Item 12.7 (A)
			Rate same as per item No. 12.7 (A) including OH & CP					
			Rate per cum			***say***	***5309.00***	
			or				***5309.00***	
15.10		**B**	**Cement concrete Grade M15**					
			Concrete Grade M15 Rate as per item No. 12.8 (A) including OH & CP	cum	1.00	7004.00	7004.00	Item 12.8 (A)
			Rate per cum			***say***	***7004.00***	
							7004.00	
		Note	Other items like excavation for foundation, filling behind wall, filter media, weep holes etc. shall be added separately as per approved design.					
15.11	**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.**					
			Unit = cum					
			Taking Output = 1 cum					
			a) Material					
			Stone	cum	1.00	858.63	858.63	M-003
			Stone Spalls	cum	0.20	969.66	193.93	M-008
			b) Labour					
			Mate	day	0.05	329.34	16.47	L-12
			Mason	day	0.25	352.86	88.22	L-11
			Mazdoor	day	1.00	152.91	152.91	L-13
			Add 1 per cent of cost of (a+b) for trimming and preparation of bed.				13.10	
			c) Overhead charges @ 0.25 on (a+b)				330.81	
			d) Contractor's profit @ 0.1 on (a+b+c)				165.41	
			Rate per cum = (a+b+c+d)				1819.46	
						say	***1819.00***	
							1819.00	

CHAPTER-16
REPAIR AND REHABILITATION

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
16.1	2809		**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 1000 m**					
			Unit = Sq m (Thickness 75 mm)					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.06	329.34	19.76	L-12
			Mazdoor	day	1.00	152.91	152.91	L-13
			b) Machinery					
			Air Compressor 250 cfm with pneumatic breaker/jack hammer along with accessories.	hour	1.00	334.04	334.04	P&M-001
			Tractor-trolley.	hour	0.50	379.91	189.96	P&M-053
			c) Overhead charges @ 0.3 on (a+b)				209.00	
			d) Contractor's profit @ 0.1 on (a+b+c)				90.57	
			Cost for 10 sqm = (a+d+c+d)				996.23	
			Rate per sqm = (a+b+c+d)/10				99.62	
						say	***100.00***	
16.2	2809		**Removal of existing asphaltic wearing coat comprising of 50 mm thick asphaltic concert laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000 m.**					
			Unit = Sq m					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.03	329.34	9.88	L-12
			Mazdoor	day	0.75	152.91	114.68	L-13
			b) Machinery					
			Air Compressor 250 cfm with pneumatic breaker.	hour	0.75	334.04	250.53	P&M-001
			Tractor-trolley.	hour	0.40	379.91	151.97	P&M-053
			c) Overhead charges @ 0.3 on (a+b)				158.12	
			d) Contractor's profit @ 0.1 on (a+b+c)				68.52	
			Cost for 10 sqm = (a+d+c+d)				753.69	
			Rate per sqm = (a+b+c+d)/10				75.37	
						say	***75.00***	
16.3	2807		**Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical Specification**					
			Unit = Sq m					
			Taking output = 1 sqm					
			Assuming thickness 25 mm					
			a) Material					
			Cement	kg	16.00	8.939	143.03	M-
			Graded sand	cum	0.04	1176.20	47.05	M-005
			Wire mesh 50mm x 50mm size of 3mm wire	kg	2.00	74.10	148.20	M-199
			Epoxy	kg	0.67	957.13	641.28	M-102
			Accelerator compound for guniting @ 4 per cent of weight of cement	kg	0.64	166.73	106.70	M-186
			Add 2 per cent of cost of material for miscellaneous consumables like nozzles, wire brush, cotton waste etc.				21.73	
			b) Labour					
			Mate	day	0.01	329.34	3.29	L-12
			Mason	day	0.04	352.86	14.11	L-11
			Mazdoor	day	0.14	152.91	21.41	L-13
			c) Machinery					
			Compressor with guniting equipment along with accessories	hour	0.10	470.48	47.05	P&M-076
			d) Overhead charges @ 0.3 on (a+b+c)				358.15	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				155.20	
			Rate per sqm = (a+b+c+d+e)				1707.20	
						say	***1707.00***	
							1707.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
16.4	**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**					
			Unit = Number					
			Taking output = 1 No.					
			a) Material					
			Nipples	each	1.00	33.72	33.72	M-135
			Cement, fixing compound and consumables @ 15 per cent of cost of nipple				5.06	
			b) Labour					
			Mate	day	0.01	329.34	3.29	L-12
			Mazdoor (Skilled) labour for drilling	day	0.08	244.65	19.57	L-15
			Mazdoor (Skilled) labour for fixing nipple and sealing inlets	day	0.08	244.65	19.57	L-15
			Mazdoor for cutting and removing of nipples	day	0.04	152.91	6.12	L-13
			Add 10 per cent of labour cost for drilling holes etc				4.86	
			c) Overhead charges @ 0.3 on (a+b)				27.66	
			d) Contractor's profit @ 0.1 on (a+b+c)				11.98	
			Rate per No. = (a+b+c+d)				131.83	
						say	***132.00***	
							132.00	
16.5	**2806**		**Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical Specification.**					
		A	**Cement Grout**					
			Unit = kg					
			Taking output = 1 kg					
			a) Material					
			Cement including 10 per cent wastage	kg	1.10	8.94	9.83	M-
			Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				1.97	
			b) Labour					
			Mate	day	0.08	329.34	26.35	L-12
			Mazdoor (Skilled)	day	0.10	244.65	24.46	L-15
			Mazdoor	day	0.10	152.91	15.29	L-13
			c) Machinery					
			Grout pump with agitator and accessories	hour	0.10	419.90	41.99	M-117
			d) Overhead charges @ 0.3 on (a+b+c)				35.97	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				15.59	
			Rate per kg = (a+b+c+d+e)				171.45	
						say	***171.00***	
							171.00	
		B	**Cement Mortar (1:1) Grouting**					
			Unit = kg					
			Taking output = 1 kg					
			a) Material					
			Cement including 10 per cent wastage	kg	0.55	8.94	4.92	M-
			Sand including 10 per cent wastage	kg	0.55	0.78	0.43	M-
			Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				0.98	
			b) Labour					
			Mate	day	0.08	329.34	26.35	L-12
			Mazdoor (Skilled)	day	0.10	244.65	24.46	L-15
			Mazdoor	day	0.10	152.91	15.29	L-13
			c) Machinery					
			Grout pump with agitator and accessories	hour	0.10	419.90	41.99	M-117
			d) Overhead charges @ 0.3 on (a+b+c)				34.33	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				14.88	
			Rate per kg = (a+b+c+d+e)				163.63	
						say	***164.00***	
							164.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
16.6	**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.**					
			Unit = sqm					
			Taking output = 10 sqm for an average thickness of 25mm.					
			a) Labour					
			Mate	day	0.06	329.34	19.76	L-12
			Mazdoor (Skilled)	day	0.75	244.65	183.49	L-15
			Mazdoor	day	0.75	152.91	114.68	L-13
			b) Material					
			Pre-packed polymer concrete based on epoxy system complete with curing compound, intiator and promoter including 5 per cent wastage.	kg	315.00	98.80	31122.25	M-150
			c) Machinery					
			Grout pump with agitator and accessories	hour	2.00	419.90	839.81	M-117
			d) Overhead charges @ 0.3 on (a+b+c)				9684.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4196.40	
			Cost for 10 sqm = a+b+c+d+e				46160.38	
			Rate per sqm = (a+b+c+d+e)/10				4616.04	
						say	***4616.00***	
		Note	This item is a proprietory item available in market as pre-packed polymer concrete and is required to be applied as per instructions of the manufacturer.					
16.7	**2803**		**Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.**					
			Unit = kg					
			Taking output = 1 kg					
			a) Material					
			Epoxy including 10 per cent wastage	kg	1.10	957.13	1052.85	M-102
			b) Labour					
			Mate	day	0.08	329.34	26.35	L-12
			Mazdoor (Skilled)	day	0.10	244.65	24.46	L-15
			Mazdoor	day	0.10	152.91	15.29	L-13
			c) Machinery					
			Epoxy Injection gun	hour	0.10	352.86	35.29	P&M-078
			d) Overhead charges @ 0.3 on (a+b+c)				346.27	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				150.05	
			Rate per kg = (a+b+c+d+e)				1650.56	
						say	***1651.00***	
							1651.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
16.8	**2804**		**Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical Specification**					
			Unit = sqm					
			Taking output = 10 sqm					
			Assume average 10mm thickness of epoxy mortar					
			a) Material					
			Epoxy resin-hardener mix for prime coat	kg	2.50	1327.64	3319.09	M-101
			Epoxy mortar	kg	2.20	679.26	1494.36	M-103
			Epoxy resin -hardener mix for seal coat.	kg	2.00	1327.64	2655.27	M-101
			Add 3 per cent cost of material for other consumables like acetone etc and to cover wastage.				224.06	
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			Mazdoor	day	0.50	152.91	76.45	L-13
			c) Overhead charges @ 0.3 on (a+b)				2371.42	
			d) Contractor's profit @ 0.1 on (a+b+c)				1027.62	
			Cost for 10 sqm = a+b+c+d				11303.77	
			Rate per sqm = (a+b+c+d)/10				1130.38	
						say	***1130.00***	
							1130.00	
16.9	**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, strength not less than 25 Mpa and workmanship conforming to clause 2807.6.**					
			unit: sqm					
			Taking output = 10 sqm, 40 mm average thickness.					
			a) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor	day	0.50	152.91	76.45	L-13
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	1.00	334.04	334.04	P&M-001
			Shotcreteing equipment	hour	1.00	470.48	470.48	P&M-076
			water tanker 6 KL capacity	hour	0.02	517.53	10.35	P&M-060
			c) Material					
			Cement	kg	120.00	8.939	1072.69	M-
			Sand	cum	0.15	1176.20	176.43	M-005
			Coarse aggregate of size 4.75mm	cum	0.15	1566.98	235.05	M-024
			Quick setting compound	kg	2.50	43.23	108.06	M-152
			Water	KL	0.10	55.58	5.56	M-195
			d) Overhead charges @ 0.3 on (a+b+c)				787.38	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				341.20	
			Cost for 10 sqm = a+b+c+d+e				3753.20	
			Rate per sqm = (a+b+c+d+e)/10				375.32	
						say	***375.00***	
							375.00	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
16.10	**2800**		**Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete**					
			Unit = sqm					
			Taking output = 10 sqm					
			Assumed thickness - 10 mm					
			a) Material					
			Acrylic polymer bonding coat	Litre	1.40	321.10	449.54	M-057
			pre-packed cement based polymer mortar of strength 45 Mpa at 28 days	kg	12.00	98.80	1185.61	M-150
			Add 3 per cent of (a) above for wastage.				49.05	
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			Mazdoor	day	0.50	152.91	76.45	L-13
			c) Overhead charges @ 0.3 on (a+b)				568.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				246.50	
			Cost for 10 sqm = a+b+c+d				2711.51	
			Rate per sqm = (a+b+c+d)/10				271.15	
						say	***271.00***	
							271.00	
16.11	**2805**		**Eproxy bonding of new concrete to old concrete**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Material					
			Epoxy resin with pot life not less than 60-90 minutes and satisfying testing as per clause 2803.9	kg	8.00	1327.64	10621.09	M-101
			Add 3 per cent of (a) above for wastage.				318.63	
			b) Labour					
			Mate	day	0.04	329.34	13.17	L-12
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			Mazdoor	day	0.50	152.91	76.45	L-13
			c) Overhead charges @ 0.3 on (a+b)				3345.50	
			d) Contractor's profit @ 0.1 on (a+b+c)				1449.72	
			Cost for 10 sqm = a+b+c+d				15946.89	
			Rate per sqm = (a+b+c+d)/10				1594.69	
						say	***1595.00***	
							1595.00	
16.17			**Replacement of Expansion Joints complete as per drawings**					
			Unit -1 RM					
			Taking output = 12 RM					
			a) Material					
			Epoxy for bonding new concrete to old concrete @ 0.8 kg/sqm	kg	9.60	957.13	9188.47	M-102
			M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i)	cum	3.60	7514.00	27050.40	Item 14.1(C)
			b) Labour					
			Removal of old expansion joint including breaking of concrete, cutting of lugs and shifting of broken material etc.					
			Mate	day	0.26	329.34	85.63	L-12
			Mazdoor	day	6.00	152.91	917.44	L-13
			Mazdoor (Skilled)	day	0.50	244.65	122.32	L-15
			c) Overhead charges @ 0.3 on (a+b)				11209.28	
			d) Contractor's profit @ 0.1 on (a+b+c)				4857.35	
			Cost for replacement of 12 RM = a+b+c+d				53430.90	
			Rate per RM = (a+b+c+d)/12				4452.57	
						say	***4453.00***	
							4453.00	
		Note	The rate for the installation of new expansion joints may be taken from the chapter on superstructure. Broken concrete will have to be replaced which has been included in this analysis.					

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
16.18			**Replacement of Damaged Concrete Railing.**					
			Unit = RM					
			Taking output = 10 RM					
			a) Labour					
			Labour for dismantling old railing and disposal of dismantled material.					
			Mate	day	0.20	329.34	65.87	L-12
			Mazdoor	day	5.00	152.91	764.53	L-13
			b) Machinery					
			Tractor-trolley for disposal of dismantled material	hour	1.00	379.91	379.91	P&M-053
			c) Overhead charges @ 0.3 on (a+b)				363.09	
			d) Contractor's profit @ 0.1 on (a+b+c)				157.34	
			Cost for 10 m = a+b+c+d				1730.74	
			Rate per metre = (a+b+c+d)/10				173.07	
						say	***173.00***	
		Note	The rate for the provision of new railing may be adopted from the chapter on superstructure.					

Non-Sch		**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-40 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 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified					
		Unit = Linear metre					
		Taking output = 10 m					
	(i)	**a) M 40 grade concrete**					
		M 40 grade concrete	cum	3.000	6569.80	19709.40	Item 14.1(A)
		b) Labour					
		Mate	day	0.040	329.34	13.17	L-12
		Mazdoor	day	1.000	152.91	152.91	L-13
		c) Material					
		HYSD steel reinforcement including dowel bars	tonne	0.280	44000.00	12320.00	M-082
		Pre-moulded asphalt filler board	sqm	0.320	1049.76	335.92	M-144
		d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				1301.26	
		e) Overhead charges @ 0.25 on (a+b+c+d)				8132.85	
		f) Contractor's profit @ 0.1 on (a+b+c+d+e)				4066.43	
		Cost for 10 metre = a+b+c+d+e				46031.93	
		Rate per metre = (a+b+c+d+e)/10				4603.19	
					say	***4603.00***	
						4603.00	

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Carriage of Material

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

Lead Charts

Sl. No.	Material	Place	Av.Lead (Km.)	
1	2	3	4	5
1	Fine Sand	Krishnai	51	To the Start Point
2	Lime	Bongaigaon	15	To the Start Point
3	Moorum	Krishnai	0	To the Start Point
4	Stone Metal	Krishnai	0	To the Start Point
5	Stone Boulder	Krishnai	0	To the Start Point
6	Stone Chips, Aggregate	Krishnai	0	To the Start Point
7	Coarse Sand	Krishnai	51	To the Start Point
8	Cement	Bongaigaon	0	To the Start Point
9	Steel	Bongaigaon	0	To the Start Point
10	Tar, Bitumen	Bongaigaon	0	To the Start Point
11	Bitumen Emulsion	Bongaigaon	0	To the Start Point
12	Structural Steel	Bongaigaon	0	To the Start Point
13	Brick	Local	0	to worksite

Basic Rate of carriage of materials

Material	Total Lead (km.)	Lead Surfaced Road	Hauling Charges on surfaced road	Lead Unsurfaced Road	Hauling Charges on unsurfaced road	Loading and Unloading	Basic rate of carriage of materials	Unit
6	7	9	10	11	12	13	14	15
Fine sand	58.000	57	4	1	4.8	92		per m3
Lime	0.000		4	0	4.8	92		per m3
Moorum	0.000		4	1	4.8	92		per m3
Metal	9.986	8.986	4	1	4.8	92	162.89	per m3
Boulder	9.986	8.986	4	1	4.8	112	180.04	per m3
Chips	9.986	8.986	4	1	4.8	92	157.19	per m3
Coarse Sand	58.000	57	4	1	4.8	92		per m3
Cement	0.000	0	4	0	4.8	162	162.00	per MT
Steel	0.000	0	4	0	4.8	162	162.00	per MT
Bitumen	0.000	0	4	0	4.8	162	162.00	per MT
Bitumen Emulsion	0.000	0	4	0	4.8	162	162.00	per MT
Structural Steel	0.000	0	4	0	4.8	162	162.00	per MT
Brick	0	0	4	0	4.8	162		per 1000

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

Finished Rate of Road Work

HAULAGE CALCULATION SHEET FOR ROAD WORKS

Sl. No.	Cl No.	Item	SOR Rate	Stone chips /agg		Stone Boulder		Stone Metal		Bitumen		Bitumen Emulsion		Lime/Filler/soil/pipe		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
1	2.1 (i)	Girth from 300 mm to 600 mm	162.00																					162.00	1.62	163.62
2	2.1 (ii)	Girth from 600 mm to 900 mm	315.00																					315.00	3.15	318.15
3	2.1 (iii)	Girth from 900 mm to 1800 mm	575.00																					575.00	5.75	580.75
4	2.1 (iv)	Girth above 1800 mm	1060.00																					1060.00	10.60	1070.60
6	2.3 (ii) A	Clearing and Grubbing Road Land by Mechanical Means - In area of light jungle	45871.00																					45871.00	458.71	46329.71
7	2.4 II. B	Dismantling of Structures - By Mechanical Means -Prestressed / Reinforced cement concrete grade M-20 & above	661.00																					661.00	6.61	667.61
8	2.4 (ii) B	Dismantling Brick / Tile work -In cement mortar	216.00																					216.00	2.16	218.16
9	2.4 (IX) A	Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works - Up to 600 mm dia	102.00																					102.00	1.02	103.02
10	2.4 (IX) B	Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works - 600 mm to 900 mm dia	139.00																					139.00	1.39	140.39
11	2.4 (IX) C	Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works - above 900 mm dia	238.00																					238.00	2.38	240.38
12	2.5 I (B)	Dismantling of Flexible Pavements by Manual Means - Granular courses	346.00																					346.00	3.46	349.46
13	2.5 II (A)	Dismantling of Flexible Pavements by Mechanical Means - Bituminous course	240.00																					240.00	2.40	242.40
	2.6	Dismantling of Cement Concrete Pavement	994.00															0.0000	0.00	0.000	0.00	0.000	0.00	994.00	9.94	1003.94
14	2.10 B	Dismantling Kilometre Stone - Ordinary KM Stone	144.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	144.00	1.44	145.44
15	3.6	Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with Disposal upto 1000 metres.	83.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	83.00	0.83	83.83
16	3.16	Construction of Embankment with Material obtained from Borrowpits	266.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	266.00	2.66	268.66
17	3.16	Construction of Embankment with Material obtained from Borrowpits with higher PI value	266.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	266.00	2.66	268.66
17	3.17	Construction of Embankment with Material Deposited from Roadway Cutting	139.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	139.00	1.39	140.39
18	3.18	Construction of Subgrade and Earthen Shoulders	322.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	322.00	3.22	325.22
19	3.22	Turfing with Sods	31.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	31.00	0.31	31.31
20	3.15	Scarifying existing bituminous surface	4.20							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	4.20	0.04	4.24
25	4.1A	GSB Grading I (plant mix method)	2322.00	0.893	157.19					0.0000	0.00	0.0000	0.00			0.384	0.00	0.0000	0.00	0.000	0.00	0.000	0.00	2462.42	24.62	2487.05
26	4.1	Reuse of GSB Material obtained from Dismantling of Pavement Coarse	818.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	818.00	8.18	826.18
21	4.12	WMM	2350.00	0.924	157.19					0.0000	0.00	0.0000	0.00			0.396	0.00	0.0000	0.00	0.000	0.00	0.000	0.00	2495.24	24.95	2520.20
22	4.14	Construction of Median and Island with Soil Taken from Borrow Areas	259.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	259.00	2.59	261.59
22	4.13	Construction of Median and Island with Soil Taken from Roadway Cutting	192.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	192.00	1.92	193.92

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 12A, N.S.C. BOSE ROAD

HAULAGE CALCULATION SHEET FOR ROAD WORKS

Sl. No.	Cl No.	Item	SOR Rate	Stone chips /agg		Stone Boulder		Stone Metal		Bitumen		Bitumen Emulsion		Lime/Filler/soil/pipe		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
23	4.15	Hard Shoulder	2322.00	0.893	157.19					0.0000	0.00	0.0000	0.00			0.384	0.00	0.0000	0.00	0.000	0.00	0.000	0.00	2462.42	24.62	2487.05
24	5.1	Prime Coat	25.00							0.0000	0.00	0.0006	162.00					0.0000	0.00	0.000	0.00	0.000	0.00	25.10	0.25	25.35
25	5.2	Tack Coat on Bitumeneous Surface	9.00							0.0000	0.00	0.0002	162.00					0.0000	0.00	0.000	0.00	0.000	0.00	9.03	0.09	9.12
26	5.2	Tack Coat on Granular Surface	17.10							0.0000	0.00	0.0004	162.00					0.0000	0.00	0.000	0.00	0.000	0.00	17.16	0.17	17.34
33	5.6	DBM (GR-I)	8408.00	0.000	157.19					0.1038	162.00	0.0000	0.00	0.0000	0.00	0.000	0.00	0.0000	0.00	0.000	0.00	0.000	0.00	8424.82	84.25	8509.06
27	5.6	DBM (GR-II)	8967.00	0.854	157.19					0.1038	162.00			0.0442	0.00	0.589	0.00							9118.11	91.18	9209.29
28	5.8	BC (GR-II)	10230.00	0.821	157.19					0.1272	162.00	0.0000	0.00	0.0451	0.00	0.642	0.00	0.0000	0.00	0.000	0.00	0.000	0.00	10379.61	103.80	10483.41
36	5.14	Mastic Asphalt (road)	1117.00							0.0201	162.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	1120.26	11.20	1131.46
29	6.1	DLC	4676.00	0.900	157.19					0.0000	0.00	0.0000	0.00			0.451	0.00	0.0000	0.00	0.150	162.00	0.000	0.00	4841.77	48.42	4890.19
30	6.2	PQC	9931.00	0.900	157.19					0.0000	0.00	0.0000	0.00					0.0101	162.00	0.394	162.00	0.000	0.00	10137.98	101.38	10239.36
31	8.1(B)	Concrete M20 Kerb	362.00	0.061	157.19					0.0000	0.00	0.0000	0.00			0.030	0.00	0.0000	0.00	0.016	162.00	0.000	0.00	374.07	3.74	377.81
40	8.3	Printing Letter	0.30							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	0.30	0.00	0.30
32	8.4	Retro-Refecltorised																							0.00	
33	(i)	90 cm equilateral triangle	2589.00	0.108	157.19					0.0000	0.00	0.0000	0.00			0.054	0.00	0.0190	162.00	0.033	162.00	0.000	0.00	2614.41	26.14	2640.55
34	(ii)	60 cm equilateral triangle	2447.00	0.108	157.19					0.0000	0.00	0.0000	0.00			0.054	0.00	0.0190	162.00	0.033	162.00	0.000	0.00	2472.41	24.72	2497.13
35	(iii)	60 cm circular	2540.00	0.108	157.19					0.0000	0.00	0.0000	0.00			0.054	0.00	0.0190	162.00	0.033	162.00	0.000	0.00	2565.41	25.65	2591.06
36	(iv)	80 mm x 60 mm rectangular	2684.00	0.108	157.19					0.0000	0.00	0.0000	0.00			0.054	0.00	0.0190	162.00	0.033	162.00	0.000	0.00	2709.41	27.09	2736.50
37	(v)	60 cm x 45 cm rectangular	2530.00	0.108	157.19					0.0000	0.00	0.0000	0.00			0.054	0.00	0.0190	162.00	0.033	162.00	0.000	0.00	2555.41	25.55	2580.96
38	(vi)	60 cm x 60 cm square	2596.00	0.108	157.19						0.00		0.00			0.054	0.00	0.0190	162.00	0.033	162.00	0.000	0.00	2621.41	26.21	2647.62
39	(vii)	90 cm high octagon	2825.00	0.108	157.19						0.00		0.00			0.054	0.00	0.0190	162.00	0.033	162.00	0.000	0.00	2850.41	28.50	2878.91
49	8.7A	Overhead Signs - Truss and Vertical Support	142869.00							0.0000	0.00	0.0000	0.00					1.0500	162.00	0.000	0.00	0.000	0.00	143039.10	1430.39	144469.49
50	8.8	Painting Two Coats	58.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	58.00	0.58	58.58
51	8.9	Printing On Steel Surface	52.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	52.00	0.52	52.52
40	8.14	5th KM Post	3970.00	0.353	157.19					0.0000	0.00	0.0000	0.00			0.176	0.00	0.00368	162.00	0.115	162.00	0.000	0.00	4044.59	40.45	4085.04
41	8.14	Oridinary KM Post	2473.00	0.242	157.19					0.0000	0.00	0.0000	0.00			0.121	0.00	0.0019	162.00	0.074	162.00	0.000	0.00	2523.42	25.23	2548.65
54	8.22	RCC Crash Barrier	3624.00	0.270	157.19					0.0000	0.00	0.0000	0.00			0.135	0.00	0.0280	162.00	0.104	162.00	0.000	0.00	3687.85	36.88	3724.73
42	8.5	Direction and Place Identification signs upto 0.9 sqm size board	3335.00	0.120	157.19					0.0000	0.00	0.0000	0.00			0.060	0.00	0.0211	162.00	0.037	162.00	0.000	0.00	3363.23	33.63	3396.86
43	8.6	Direction and Place Identification Signs with size more than 0.9 sqm size Board.	3831.00	0.144	157.19					0.0000	0.00	0.0000	0.00			0.072	0.00	0.0253	162.00	0.044	162.00	0.000	0.00	3864.88	38.65	3903.53
44	8.13	Road Marking with Hot Applied Thermoplastic Compound	655.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	655.00	6.55	661.55
58	8.23 B	"THRIE" : Metal Beam Crash Barrier, Type-B	5370.00							0.0000	0.00	0.0000	0.00						162.00	0.000	0.00	0.051	162.00	5378.22	53.78	5432.00
59	8.16	BOUNDARY PILLAR	636.00	0.020	157.19											0.010	0.00	0.0014	162.00	0.006	162.00			640.31	6.40	646.71
45	8.20	RAILING	2062.00															0.0099	162.00	0.018	162.00			2066.50	20.66	2087.16
50	8.23. A	W- Metal beam crash barrier	3572.00																			0.037	162.00	3577.98	35.78	3613.76
51	8.15	Road Delineators	1258.00																					1258.00	12.58	1270.58
56	3.19	Compacting Original Ground	73.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	73.00	0.73	73.73
75	Non-Sch	Reinforced Cement Concrete Crash Barrier	4603.00															0.0280	162.00	0.1290	162.00			4628.43	46.28	4674.72
		Construction of Median and Island with Soil Taken from Roadway Cutting	192.00																					192.00	1.92	193.92
56	10.4	Filling Pot-holes and Patch Repairs with open-Graded Premix surfacing, 20mm.	149.00							0.0015	162.00	0.0002	162.00											149.28	1.49	150.77
57	2.4 (ii) B	Dismantling of Structures - Lime /Cement Concrete(By Mechanical Means for items No. 202(b) & (c)- Prestressed / Reinforced cement concrete grade M-20 & above	661.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	661.00	6.61	667.61
58	2.5 I (A)	Dismantling of Flexible Pavements by Manual Means - Bituminous courses	467.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	467.00	4.67	471.67
59	2.10 A	Dismantling Kilometre Stone - 5th KM stone	255.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	255.00	2.55	257.55
60	3.6	Excavation in Soil using Hydraulic Excavator	83.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.000	0.00	0.000	0.00	83.00	0.83	83.83

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

HAULAGE CALCULATION SHEET FOR ROAD WORKS

Sl. No.	Cl No.	Item	SOR Rate	Stone chips /agg		Stone Boulder		Stone Metal		Bitumen		Bitumen Emulsion		Lime/Filler/soil/pipe		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
62	4.1A	Granular Sub-base with Close Graded Material (Table:- 400-1)-Plant Mix Method(for grading- II Material)	2384.00	0.768	157.19					0.0000	0.00	0.0000	0.00			0.512	0.00	0.0000	0.00	0.000	0.00	0.000	0.00	2504.72	25.05	2529.77
63	8.1(A)	Concrete M20 Kerb Using Concrete Mixer	362.00							0.0000	0.00	0.0000	0.00					0.0000	0.00	0.016	162.00	0.000	0.00	364.56	3.65	368.21
64	8.14	Hectometer stone (Precast)	635.00							0.0000	0.00	0.0000	0.00					0.0020	162.00	0.0132	162.00	0.000	0.00	637.46	6.37	643.84
65	8.27	Street Lighting (pole Height 6m)	28985.00																				0.00	28985.00	289.85	29274.85
66	3.13 (I) A.	Excavation for Structures - Ordinary soil - Manual Means (Depth upto 3 m)	158.00																				0.00	158.00	1.58	159.58
67	*7.5*	Reinforced Earth Retaining Wall																							0.00	
	(i)	Facing elements of RCC	1529.00															0.0051	162.00	0.180	162.00		0.00	1558.98	15.59	1574.57
	(ii)	Assembling, joining and laying of reinforcing elements.																							0.00	
		With reinforcing elements of synthetic geogrids	590.00																				0.00	590.00	5.90	595.90
69	9.1	PCC 1:3:6 in Foundation (Plain cement concrete 1:3;6 mix with crushed stone aggregate 40 mm niminal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days)	5237.00	0.920	157.19											0.460	0.00			0.2200	162.00		0.00	5417.26	54.17	5471.43
70	4.6	**combination as per clause 403.2 and table 400.4in 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**	3479.00	0.960	157.19											0.3200	0.00			0.040	162.00			3636.38	36.36	3672.75
	(ii)	**For Base course**	3073.00	0.480	157.19											0.8000	0.00			0.040	162.00			3154.93	31.55	3186.48
71	3.24	**Surface Drains in Soi**l(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)	69.00																					69.00	0.69	69.69
72	Non-Sch	RAP	1858.00	0.370	157.19															0.037	162.00			1922.09		1922.09
73	8.7B	Aluminium Alloy Plate for Over Head Sign	679.00																					679.00	6.79	685.79
74	3.23	Seeding and Mulching	126.00																					126.00	1.26	127.26
75	8.35	Road Stud	677.00																					677.00	6.77	683.77
75	Non sche	Utility Duct	835.00																					835.00	8.35	843.35
76	4.1A	GSB Grading III (plant mix method)	2235.00	0.608	157.190					0.000	0.000	0.000	0.000	0.000	0.000	0.672	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2330.57	23.31	2353.88
77	Non-Sche	Sand Pile	1320.00													0.1963	0.0000							1320.00	13.20	1333.20

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 12A, N.S.C. BOSE ROAD

Finished Rate of Structure Work

HAULAGE CALCULATION SHEET FOR MAJOR BRIDGES

Sl. No.	Cl No.	Item	SOR Rate	Brick		Stone Boulder		Aggregate / Stone chips		Bitumen		Bitumen Emulsion		Lime/Filler		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
1	12.1 A (i)	Excavation for Structures (Ordinary soil) with dewatering - Mechanical Means Depth upto 3m	80.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	80.00	0.80	80.80
2	12.1A (ii)	Depth 3m to 6m	103.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	103.00	1.03	104.03
3	12.1A (iii)	Depth above 6m	137.00																					137.00	1.37	138.37
4	12.3	Sand filling in foundation	2202.00	0.0000	0.00					0.0000	0.00	0.0000	0.00			1.2000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	2202.00	22.02	2224.02
5	12.5	Brick masonry work (1:3)	8390.32	500.00	0.00								0.00							0.1613	162.00			8416.45	84.16	8500.62
6	12.6	Cement Morter 1:6	4298.00	0.0000	0.00					0.0000	0.00	0.0000	0.00			1.3371	0.00	0.0000	0.00	0.2880	162.00	0.0000	0.00	4344.66	43.45	4388.10
7	12.6	Cement Morter 1:3	5945.00	0.0000	0.00					0.0000	0.00	0.0000	0.00			1.0500	0.00	0.0000	0.00	0.5100	162.00	0.0000	0.00	6027.62	60.28	6087.90
8	12.7	Stone Masonary 1:3	5321.00	0.0000	0.00	1.1000	112.00	0.790	157.19	0.0000	0.00	0.0000	0.00			0.3150	0.00	0.0000	0.00	0.1530	162.00	0.0000	0.00	5593.17	55.93	5649.10
9	12.8 A (I)	PCC M15	7004.00	0.0000	0.00			0.900	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.2753	162.00	0.0000	0.00	7190.07	71.90	7261.97
10	12.8 B	PCC M20	7776.00	0.0000	0.00			0.900	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.3440	162.00	0.0000	0.00	7973.20	79.73	8052.93
11	12.8 C	RCC M20 (Batching plant)	8184.00	0.0000	0.00			0.900	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.3472	162.00	0.0000	0.00	8381.72	83.82	8465.53
12	12.8 E	RCC M25(Batching plant)	8878.00	0.0000	0.00			0.900	157.19	0.0000	0.00	0.0000	0.00			0.4032	0.00	0.0000	0.00	0.0125	162.00	0.0000	0.00	9021.50	90.21	9111.71
13	12.8 F	PCC M30 (Batching plant)	8820.00	0.0000	0.00			0.900	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.4050	162.00	0.0000	0.00	9027.08	90.27	9117.35
14	12.8 G	RCC M30 (Batching plant)	8901.00	0.0000	0.00			0.900	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.4067	162.00	0.0000	0.00	9108.36	91.08	9199.44
15	12.8 H	RCC M35 (Batching plant)	9053.00	0.0000	0.00			0.900	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.4220	162.00	0.0000	0.00	9262.84	92.63	9355.46
16	12.11 C	PCC/RCC in Well Foundation BOTTOM																							0.00	0.00
17	12.11 C (i) Case-II	PCC Grade M20	8809.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.3700	162.00	0.0000	0.00	9010.41	90.10	9100.52
18	12.11 C (ii) Case-II	PCC Grade M25	9232.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.3990	162.00	0.0000	0.00	9438.11	94.38	9532.49
19	12.11 C (iii) Case-II	PCC Grade M30	9313.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.4053	162.00	0.0000	0.00	9520.13	95.20	9615.33
20	12.11 C (iv) Case-II	PCC Grade M35	9490.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.4190	162.00	0.0000	0.00	9699.35	96.99	9796.34
21	12.22	Steel Liner	100170.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	1.0500	162.00	100340.10	1003.40	101343.50
22	12.24	Board Cast in Situ RCC M35 (Dia 1000m)	13056.00	0.0000	0.00			0.7065	157.19	0.0000	0.00	0.0000	0.00			0.3533	0.00	0.0000	0.00	0.3289	162.00	0.0000	0.00	13220.34	132.20	13352.54
23	12.25	Board Cast in Situ RCC M35 (Dia 1200m)	17085.00	0.0000	0.00			1.0170	157.19	0.0000	0.00	0.0000	0.00			0.5085	0.00	0.0000	0.00	0.4735	162.00	0.0000	0.00	17321.57	173.22	17494.79
24	12.38 (B) (ii)	RCC Pile Cap M25	8898.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.3993	162.00	0.0000	0.00	9104.16	91.04	9195.20
25	12.39	Levelling Course Pile Cap M15	6595.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.2753	162.00	0.0000	0.00	6781.07	67.81	6848.88
26	12.40	TMT Bar	66702.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					1.0500	162.00	0.0000	0.00	0.0000	0.00	66872.10	668.72	67540.82
27	13.2	pointing	611.00										0.00			0.0032	0.00			0.0015	162.00			611.25	6.11	617.36
28	13.3	Plastering with cement mortar (1:3)	1543.00	0.0000	0.00					0.0000	0.00	0.0000	0.00			0.0151	0.00	0.0000	0.00	0.0073	162.00	0.0000	0.00	1544.19	15.44	1559.63
29	13.5 B (p)	PCC Grade M20 Height upto 5 M	8225.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.3440	162.00	0.0000	0.00	8422.20	84.22	8506.42
30	13.5 E (p) Case-II	RCC Grade M20 Height upto 5 M	8137.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.3472	162.00	0.0000	0.00	8334.72	83.35	8418.06
31	13.5 E (q)Case II	RCC M20 (SUBSTRUCTURE)-5-10 M	8433.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.450	0.00	0.0000	0.00	0.3472	162.00	0.0000	0.00	8630.71	86.31	8717.02
32	13.5 F (p) Case II	RCC Substructure M25 Height 5M	9414.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.450	0.00	0.0000	0.00	0.4032	162.00	0.0000	0.00	9620.79	96.21	9717.00
33	13.5 F (q) Case II	RCC Substructure M25 Height 5M-10M	9722.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.450	0.00	0.0000	0.00	0.4032	162.00	0.0000	0.00	9928.79	99.29	10028.08
34	13.5 F (r) Case II	RCC Substructure M25 Height above10M	10184.00					0.9000	157.19							0.450	0.00			0.4032	162.00			10390.79	103.91	10494.70
35	13.5 H (p) Case II	RCC M35 Height 5M	10094.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.450	0.00	0.0000	0.00	0.4220	162.00	0.0000	0.00	10303.84	103.04	10406.87
		RCC M35 Height 5M to 10M	10315.00					0.9000	157.19							0.450	0.00			0.4220	162.00			10524.84	105.25	10630.08
36	13.6	TMT Bar	66780.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					1.0500	162.00	0.0000	0.00	0.0000	0.00	66950.10	669.50	67619.60
37	13.8	Weep Hole	1869.00	0.0000	0.00					0.0000	0.00	0.0000	0.00			0.0018	0.00	0.0000	0.00	0.0009	162.00	0.0000	0.00	1869.15	18.69	1887.84
38	13.9 A	Back Filling In Abutment, Wing Wall, Return Wall by Granular Material	1867.00	0.0000	0.00			1.2000	157.19	0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	2055.63	20.56	2076.18
39	13.9 B	Back Filling In Abutment, Wing Wall, Return Wall by Sandy Material	2387.00	0.0000	0.00					0.0000	0.00	0.0000	0.00			1.200	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	2387.00	23.87	2410.87
40	13.10	Filter Media	2164.00	0.0000	0.00			1.2000	157.19	0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	2352.63	23.53	2376.15
41	13.14	Elastomeric Bearing	1.25	0.0000	0.00					0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	1.25	0.01	1.26
42	13.16	POT-PTFE bearing	455.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	455.00	4.55	459.55

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

HAULAGE CALCULATION SHEET FOR MAJOR BRIDGES

Sl. No.	Cl No.	Item	SOR Rate	Brick		Stone Boulder		Aggregate / Stone chips		Bitumen		Bitumen Emulsion		Lime/Filler		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
43	14.1 A case - II(i) a).	RCC M25 Superstructure (height 5m)	10219.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.452	0.00	0.0000	0.00	0.3996	162.00	0.0000	0.00	10425.21	104.25	10529.46
44	14.1 (B) Case -II (ii) (p)	RCC T-Beam Height 5M (M25)	10645.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.452	0.00	0.0000	0.00	0.3996	162.00	0.0000	0.00	10851.21	108.51	10959.72
45	14.1 (B) Case -II (ii) (q)	RCC T-Beam Height 10M	11071.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.452	0.00	0.0000	0.00	0.3996	162.00	0.0000	0.00	11277.21	112.77	11389.98
46	14.1 (B) Case -II (ii) ('r)	RCC T-Beam Height above 10M	11497.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.452	0.00	0.0000	0.00	0.3996	162.00	0.0000	0.00	11703.21	117.03	11820.24
47	14.1 (C) Case -II (i) (p)	RCC M30 Solid Slab Height 5M	10331.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.455	0.00	0.0000	0.00	0.4066	162.00	0.0000	0.00	10538.34	105.38	10643.72
48	14.1 (C) Case -II (i) (q)	RCC M30 Solid Slab Height 10M	10762.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.455	0.00	0.0000	0.00	0.4066	162.00	0.0000	0.00	10969.34	109.69	11079.03
49	14.1 (C) Case -II (i) ('r)	RCC M30 Solid Slab Height 15M	11192.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.455	0.00	0.0000	0.00	0.4066	162.00	0.0000	0.00	11399.34	113.99	11513.33
50	14.1 (C) Case -II (i) (p)	RCC M30 T-Beam Height 5M	10762.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4550	0.00	0.0000	0.00	0.4066	162.00	0.0000	0.00	10969.34	109.69	11079.03
51	14.1 (C) Case -II (i) (q)	RCC M30 T-Beam Height 10M	11192.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4550	0.00	0.0000	0.00	0.4066	162.00	0.0000	0.00	11399.34	113.99	11513.33
52	14.1 (C) Case -II (i) ('r)	RCC M30 T-Beam Height 15M	11623.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4550	0.00	0.0000	0.00	0.4066	162.00	0.0000	0.00	11830.34	118.30	11948.64
53	14.2	Supplying, Fitting, Fixing TMT Bar	67881.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					1.0500	162.00	0.0000	0.00	0.0000	0.00	68051.10	680.51	68731.61
54	14.5	Mastic Asphalt(FOR CD WORKS)	407.50	0.0000	0.00			0.0081	157.19	0.00283	162.00	0.0000	0.00	0.00497	0.00			0.0000	0.00	0.0000	0.00	0.0000	0.00	409.23	4.09	413.32
55	14.6	Precast RCC Railing	2094.00	0.0000	0.00			0.0767	157.19	0.0000	0.00	0.0000	0.00			0.039	0.00	0.0180	162.00	0.0347	162.00	0.0000	0.00	2114.60	21.15	2135.74
56	14.9	Drainage Spout	12494.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	12494.00	124.94	12618.94
57	14.10	PCC M15 Grade Levelling Course	6736.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.450	0.00	0.0000	0.00	0.2753	162.00	0.0000	0.00	6922.07	69.22	6991.29
58	14.11	RCC Approach Slab	12167.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.450	0.00	0.0500	162.00	0.4067	162.00	0.0000	0.00	12382.46	123.82	12506.28
59	14.22	Strip Seal Expansion Joint	14462.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	14462.00	144.62	14606.62
60	15.1	Lying Boulder	1793.00	0.0000	0.00	1.00	180.04			0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	1973.04	19.73	1992.77
61	15.4 A	laying Pitching on slopes	1793.00			1.00	180.04																	1973.04	19.73	1992.77
62	15.5	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	2281.00	0.0000	0.00			1.2000	180.0425	0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	0.0000	0.00	2497.05	24.97	2522.02
63	15.8 (A)	Laying Flooring by Rubble stone	6391.00			1.0000	180.04									0.3465	0.00			0.1683	162.00			6598.31	65.98	6664.29
64	15.8 (B)	Laying Flooring	9408.00	0.0000	0.00			1.1970	157.19	0.0000	0.00	0.0000	0.00			0.599	0.00	0.0000	0.00	0.3662	162.00	0.0000	0.00	9655.48	96.55	9752.04
65	15.10 (B)	Curtain Wall	7004.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.450	0.00	0.0000	0.00	0.2753	162.00	0.0000	0.00	7190.07	71.90	7261.97
66	15.11	Flexible Apron	1819.00			1.0000	180.04																	1999.04	19.99	2019.03
67	Non-Sch	Supplying, Febrication & Erection of Structural Steel	108712.00	0.0000	0.00					0.0000	0.00	0.0000	0.00					0.0000	0.00	0.0000	0.00	1.0500	162.00	108882.10	1088.82	109970.92
68	16.1	Removal of existing cement concrete wearing coat	100.00																					100.00	1.00	101.00
69	16.2	Removal of existing asphaltic wearing coat	75.00																					75.00	0.75	75.75
70	16.9	Removal of defective concrete, cleaning the surface thoroughly	375.00					0.0150	157.19							0.0150	0.00			0.0120	162.00			379.30	3.79	383.09
71	16.10	Applying pre-packed cement based polymer mortar	271.00																					271.00	2.71	273.71
72	16.11	Eproxy bonding of new concrete to old concrete	1595.00																					1595.00	15.95	1610.95
73	16.17	Replacement of Expansion Joints	4453.00					0.2700	157.19							0.1350	0.00			0.1220	162.00			4515.21	45.15	4560.36
74	16.18	Replacement of Damaged Concrete Railing.	173.00																					173.00	1.73	174.73
75	Non-Sch	Reinforced Cement Concrete Crash Barrier	4603.00					0.270	157.19							0.1350	0.00	0.0280	162.00	0.1290	162.00			4670.88	46.71	4717.58
	14.18	**Filler joint**																						0.00	0.00	0.00
76	14.18 (i)	Providing & fixing 2 mm thick corrugated copper plate in expansion joint	2009.00																					2009.00	20.09	2029.09

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 12A, N.S.C. BOSE ROAD

HAULAGE CALCULATION SHEET FOR MAJOR BRIDGES

Sl. No.	Cl No.	Item	SOR Rate	Brick		Stone Boulder		Aggregate / Stone chips		Bitumen		Bitumen Emulsion		Lime/Filler		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
77	14.18 (ii)	Providing & fixing 20 mm thick compressible fibre board in expansion joint	684.00																					684.00	6.84	690.84
78	14.18 (iii)	Providing and fixing in position 20 mm thick premoulded joint filler	389.00																					389.00	3.89	392.89
79	14.18 (iv)	Providing and filling joint sealing compound	19.00							0.0001	162.00					0.0010	0.00							19.01	0.19	19.20
80	15.2	Boulder Apron Laid in Wire Crates	3572.00			1.0000	180.04																	3752.04	37.52	3789.56
	13.5 G	RCC Grade M30																						0.00	0.00	0.00
81	13.5 G (p)	Height upto 5m	9461.00					0.9000	157.19							0.4550	0.00			0.4067	162.00			9668.35	96.68	9765.03
82	13.5 G (q)	Height 5m to 10m	9727.00					0.9000	157.19							0.4550	0.00			0.4067	162.00			9934.35	99.34	10033.69
83	13.5 G (r)	Height above 10m	10106.00					0.9000	157.19							0.4550	0.00			0.4067	162.00			10313.35	103.13	10416.48
	13.5 a (p)	PCC Grade M15 Height upto 5 M	7410.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.2753	162.00	0.0000	0.00	7596.08	75.96	7672.04
84	12.1 I . B . (b).(i)	Excavation for Structures (Ordinary soil) with dewatering - Mechanical Means Depth upto 3m	63.00																					63.00	0.63	63.63
85	12.1 I . B . (b).(i)	Depth 3m to 6m	72.00																					72.00	0.72	72.72
86	*13.11*	Supplying, fitting and fixing in position true to line and level cast steel rocker bearing	1168.00																					1168.00	11.68	1179.68
87	13.12	Supplying, fitting and fixing in position true to line and level forged steel roller bearing	1459.00																					1459.00	14.59	1473.59
88	15.10(A)	Curtain Wall-Stone masonry in cement mortar (1:3)	5309.00			1.1000	180.04	0.7900	157.19							0.3150	0.00			0.1530	162.00			5656.01	56.56	5712.57
89	14.1 (E) Case -II (ii) ('p)	PSC M40 T-Beam Height upto 5M	11424.00					0.9000	157.19							0.4500	0.00			0.4300	162.00			11635.13	116.35	11751.48
90	14.1 (F) (i) ('p)	PSC M45 For solid slab Height upto 5M	11310.00					0.9000	157.19							0.4500	0.00			0.4650	162.00			11526.80	115.27	11642.07
91	14.3	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications	256357.00																	0.3316	162.00			256410.71	2564.11	258974.82
92	14.4	Providing and laying Cement concrete wearing coat M-30 grade	13731.00					0.9000	157.19							0.4550	0.00	0.0750	162.00	0.4066	162.00			13950.49	139.50	14089.99
93	12.37	Pile load test on single vertical pile in accordance with IS:2911(Part-IV)																							0.00	
	i)	Initial and Routine load test	363.00																					363.00	3.63	366.63
	ii	Lateral load test	6050.00																					6050.00	60.50	6110.50
94	14.1 (F) (i) ('p)	PSC M50 For solid slab Height upto 5M	13608.00					0.9000	157.19							0.4500	0.00			0.4650	162.00			13824.80	138.25	13963.05
95	15.4B	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 (Cement Concrete Blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15)	7144.00					0.9000	157.19							0.4500	0.00			0.2753	162.00			7330.07	73.30	7403.37
96	14.1E Case II	PSC M40 (cast-in-situ box girder, segment construction and balanced cantilever) Height upto 5M	12817.00					0.9000	157.19							0.4500	0.00			0.4300	162.00			13028.13	130.28	13158.41
97		PSC M40 (cast-in-situ box girder, segment construction and balanced cantilever) Height 5-10 M	13745.00					0.9000	157.19							0.4500	0.00			0.4300	162.00			13956.13	139.56	14095.69
97	12.38 (B) (ii)	RCC Pile Cap M30	8974.00	0.0000	0.0000	0.0000	0.0000	0.9000	157.1904	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4500	0.0000	0.0000	0.0000	0.3993	162.0000	0.0000	0.0000	9180.16	91.80	9271.96
98	14.1 (C) Case -II (i) ('r)	RCC M35 T-Beam Height 5M	10813.00	0.0000	0.00			0.9000	157.19	0.0000	0.00	0.0000	0.00			0.4500	0.00	0.0000	0.00	0.4220	162.00	0.0000	0.00	11022.84	110.23	11133.06
99	13.5 H (p) Case II	RCC M35 Height 5M to 10M	10645.00					0.9000	157.19							0.450	0.00			0.4220	162.00			10854.84	108.55	10963.38

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

HAULAGE CALCULATION SHEET FOR MINOR BRIDGES & SMALL CULVERTS

Sl. No.	Cl No.	Item	SOR Rate	Brick/pipe		Stone Boulder		Aggregate / Stone chips		Bitumen		Bitumen Emulsion		Lime/Filler		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
1	12.1 A (i)	Excavation for Structures	76.80	0.000	0.000					0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	76.80	0.77	77.57
2	12.1A (ii)	Depth 3m to 6m	98.88	0.000	0.000					0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	98.88	0.99	99.87
3	12.1A (iii)	Depth above 6m	131.52																					131.52	1.32	132.84
4	12.3	Sand filling in foundation	2113.92	0.000	0.000					0.000	0.000	0.000	0.000			1.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2113.92	21.14	2135.06
5	12.5	Brick masonry work (1:3)	8054.71	500.0	0.000								0.000							0.161	162.000			8080.84	80.81	8161.65
6	12.6	Cement Morter 1:6	4126.08	0.000	0.000					0.000	0.000	0.000	0.000			1.337	0.000	0.000	0.000	0.288	162.000	0.000	0.000	4172.74	41.73	4214.46
7	12.6	Cement Morter 1:3	5707.20	0.000	0.000					0.000	0.000	0.000	0.000			1.050	0.000	0.000	0.000	0.510	162.000	0.000	0.000	5789.82	57.90	5847.72
8	12.7	Stone Masonary 1:3 (CR)	5108.16	0.000	0.000	1.100	112.000	0.790	157.190	0.000	0.000	0.000	0.000			0.315	0.000	0.000	0.000	0.153	162.000	0.000	0.000	5380.33	53.80	5434.13
9	12.8 A	PCC M15	6723.84	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.275	162.000	0.000	0.000	6909.91	69.10	6979.01
10	12.8 B	PCC M20	7464.96	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.344	162.000	0.000	0.000	7662.16	76.62	7738.78
11	12.8 C	RCC M20 (Batching plant)	7856.64	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.347	162.000	0.000	0.000	8054.36	80.54	8134.90
12	12.8 E	RCC M25(Batching plant)	8522.88	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.403	0.000	0.000	0.000	0.013	162.000	0.000	0.000	8666.38	86.66	8753.04
13	12.8 F	PCC M30 (Batching plant)	8467.20	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.405	162.000	0.000	0.000	8674.28	86.74	8761.02
14	12.8 G	RCC M30 (Batching plant)	8544.96	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.407	162.000	0.000	0.000	8752.32	87.52	8839.84
15	12.8 H	RCC M35 (Batching plant)	8690.88	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.422	162.000	0.000	0.000	8900.72	89.01	8989.72
16	12.11 C	PCC/RCC in Well Foundation BOTTOM																						0.00	0.00	0.00
17	12.11 C (i) Case-II	PCC Grade M20	8456.64	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.370	162.000	0.000	0.000	8658.05	86.58	8744.63
18	12.11 C (ii) Case-II	PCC Grade M25	8862.72	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.399	162.000	0.000	0.000	9068.83	90.69	9159.52
19	12.11 C (iii) Case-II	PCC Grade M30	8940.48	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.405	162.000	0.000	0.000	9147.61	91.48	9239.09
20	12.11 C (iv) Case-II	PCC Grade M35	9110.40	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.419	162.000	0.000	0.000	9319.75	93.20	9412.95
21	12.22	Steel Liner	96163.20	0.000	0.000					0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	1.050	162.000	96333.30	963.33	97296.63
22	12.24	Board Cast in Situ RCC M35 (Dia 1000m)	12533.76	0.000	0.000			0.707	157.190	0.000	0.000	0.000	0.000			0.353	0.000	0.000	0.000	0.329	162.000	0.000	0.000	12698.10	126.98	12825.08
23	12.25	Board Cast in Situ RCC M35 (Dia 1200m)	16401.60	0.000	0.000			1.017	157.190	0.000	0.000	0.000	0.000			0.509	0.000	0.000	0.000	0.474	162.000	0.000	0.000	16638.17	166.38	16804.55
24	12.38 (B) (ii)	RCC Pile Cap M25	8542.08	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.399	162.000	0.000	0.000	8748.24	87.48	8835.72
25	12.39	Levelling Course Pile Cap M15	6331.20	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.275	162.000	0.000	0.000	6517.27	65.17	6582.44
26	12.40	TMT Bar	64033.92	0.000	0.000					0.000	0.000	0.000	0.000					1.050	162.000	0.000	0.000	0.000	0.000	64204.02	642.04	64846.06
27	13.2	pointing	586.56										0.000			0.003	0.000			0.002	162.000			586.81	5.87	592.68
28	13.3	Plastering with cement mortar (1:3)	1481.28	0.000	0.000					0.000	0.000	0.000	0.000			0.015	0.000	0.000	0.000	0.007	162.000	0.000	0.000	1482.47	14.82	1497.29
29	13.5 B (p)	PCC Grade M20 Height upto 5 M	7896.00	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.344	162.000	0.000	0.000	8093.20	80.93	8174.13
30	13.5 E (p) Case-II	RCC Grade M20 Height upto 5 M	7811.52	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.347	162.000	0.000	0.000	8009.24	80.09	8089.33
31	13.5 E (q)Case II	RCC M20 (SUBSTRUCTURE)-5-10 M	8095.68	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.347	162.000	0.000	0.000	8293.39	82.93	8376.33
32	13.5 F (p) Case II	RCC Substructure M25 Height 5M	9037.44	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.403	162.000	0.000	0.000	9244.23	92.44	9336.67
33	13.5 F (q) Case II	RCC Substructure M25 Height 5M-10M	9333.12	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.403	162.000	0.000	0.000	9539.91	95.40	9635.31
34	13.5 F (r) Case II	RCC Substructure M25 Height above10M	9776.64					0.900	157.190							0.450	0.000			0.403	162.000			9983.43	99.83	10083.26
35	13.5 H (p) Case II	RCC M35 Height 5M	9690.24	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.422	162.000	0.000	0.000	9900.08	99.00	9999.08
36	13.6	TMT Bar	64108.80	0.000	0.000					0.000	0.000	0.000	0.000					1.050	162.000	0.000	0.000	0.000	0.000	64278.90	642.79	64921.69
37	13.8	Weep Hole	1794.24	0.000	0.000					0.000	0.000	0.000	0.000			0.002	0.000	0.000	0.000	0.001	162.000	0.000	0.000	1794.39	17.94	1812.33
38	13.9 A	Back Filling In Abutment, Wing Wall, Return Wall by Granular Material	1792.32	0.000	0.000			1.200	157.190	0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	1980.95	19.81	2000.76
39	13.9 B	Back Filling In Abutment, Wing Wall, Return Wall by Sandy Material	2291.52	0.000	0.000					0.000	0.000	0.000	0.000			1.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2291.52	22.92	2314.44
40	13.10	Filter Media	2077.44	0.000	0.000			1.200	157.190	0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	2266.07	22.66	2288.73
41	13.14	Elastomeric Bearing	1.20	0.000	0.000					0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	1.20	0.01	1.21
42	13.16	POT-PTFE bearing	436.80	0.000	0.000					0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	436.80	4.37	441.17

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

HAULAGE CALCULATION SHEET FOR MINOR BRIDGES & SMALL CULVERTS

Sl. No.	Cl No.	Item	SOR Rate	Brick/pipe		Stone Boulder		Aggregate / Stone chips		Bitumen		Bitumen Emulsion		Lime/Filler		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
43	14.1 A case - II(i) a).	RCC M25 Superstructure (height 5m)	9810.24	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.452	0.000	0.000	0.000	0.400	162.000	0.000	0.000	10016.45	100.16	10116.61
44	14.1 (B) Case -II (ii) (p)	RCC T-Beam Height 5M (M25)	10219.20	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.452	0.000	0.000	0.000	0.400	162.000	0.000	0.000	10425.41	104.25	10529.66
45	14.1 (B) Case -II (ii) (q)	RCC T-Beam Height 10M	10628.16	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.452	0.000	0.000	0.000	0.400	162.000	0.000	0.000	10834.37	108.34	10942.71
46	14.1 (B) Case -II (ii) ('r)	RCC T-Beam Height above 10M	11037.12	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.452	0.000	0.000	0.000	0.400	162.000	0.000	0.000	11243.33	112.43	11355.76
47	14.1 (C) Case -II (i) (p)	RCC M30 Solid Slab Height 5M	9917.76	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.455	0.000	0.000	0.000	0.407	162.000	0.000	0.000	10125.10	101.25	10226.35
48	14.1 (C) Case -II (i) (q)	RCC M30 Solid Slab Height 10M	10331.52	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.455	0.000	0.000	0.000	0.407	162.000	0.000	0.000	10538.86	105.39	10644.25
49	14.1 (C) Case -II (i) ('r)	RCC M30 Solid Slab Height 15M	10744.32	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.455	0.000	0.000	0.000	0.407	162.000	0.000	0.000	10951.66	109.52	11061.18
50	14.1 (C) Case -II (i) (p)	RCC M30 T-Beam Height 5M	10331.52	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.455	0.000	0.000	0.000	0.407	162.000	0.000	0.000	10538.86	105.39	10644.25
51	14.1 (C) Case -II (i) (q)	RCC M30 T-Beam Height 10M	10744.32	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.455	0.000	0.000	0.000	0.407	162.000	0.000	0.000	10951.66	109.52	11061.18
52	14.1 (C) Case -II (i) ('r)	RCC M30 T-Beam Height 15M	11158.08	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.455	0.000	0.000	0.000	0.407	162.000	0.000	0.000	11365.42	113.65	11479.07
53	14.2	Supplying, Fitting, Fixing TMT Bar	65165.76	0.000	0.000					0.000	0.000	0.000	0.000					1.050	162.000	0.000	0.000	0.000	0.000	65335.86	653.36	65989.22
54	14.5	Mastic Asphalt(FOR CD WORKS)	391.20	0.000	0.000			0.008	157.190	0.003	162.000	0.000	0.000	0.005	0.000			0.000	0.000	0.000	0.000	0.000	0.000	392.93	3.93	396.86
55	14.6	Precast RCC Railing	2010.24	0.000	0.000			0.077	157.190	0.000	0.000	0.000	0.000			0.039	0.000	0.018	162.000	0.035	162.000	0.000	0.000	2030.84	20.31	2051.15
56	14.9	Drainage Spout	11994.24	0.000	0.000					0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	11994.24	119.94	12114.18
57	14.10	PCC M15 Grade Levelling Course	6466.56	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.275	162.000	0.000	0.000	6652.63	66.53	6719.16
58	14.11	RCC Approach Slab	11680.32	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.050	162.000	0.407	162.000	0.000	0.000	11895.78	118.96	12014.73
59	14.22	Strip Seal Expansion Joint	13883.52	0.000	0.000					0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	13883.52	138.84	14022.36
60	15.1	Lying Boulder	1721.28	0.000	0.000	1.000	180.042			0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	1901.32	19.01	1920.34
61	15.4 A	laying Pitching on slopes	1721.28			1.000	180.042																	1901.32	19.01	1920.34
62	15.5	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	2189.76	0.000	0.000			1.200	180.042	0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	0.000	0.000	2405.81	24.06	2429.87
63	15.8 (A)	Laying Flooring by Rubble stone	6135.36			1.000	180.042									0.347	0.000			0.168	162.000			6342.67	63.43	6406.09
64	15.8 (B)	Laying Flooring	9031.68	0.000	0.000			1.197	157.190	0.000	0.000	0.000	0.000			0.599	0.000	0.000	0.000	0.366	162.000	0.000	0.000	9279.16	92.79	9371.95
65	15.10 (B)	Curtain Wall	6723.84	0.000	0.000			0.900	157.190	0.000	0.000	0.000	0.000			0.450	0.000	0.000	0.000	0.275	162.000	0.000	0.000	6909.91	69.10	6979.01
66	15.11	Flexible Apron	1746.24			1.000	180.042																	1926.28	19.26	1945.55
67	Non-Sch	Supplying, Febrication & Erection of Structural Steel	104363.52	0.000	0.000					0.000	0.000	0.000	0.000					0.000	0.000	0.000	0.000	1.050	162.000	104533.62	1045.34	105578.96
68	Non-Sch	Reinforced Cement Concrete Crash Barrier	4418.88					0.270	157.190							0.135	0.000	0.028	162.000	0.129	162.000			4486.76	44.87	4531.62
	14.18	**Filler joint**																						0.00	0.00	0.00
69	14.18 (i)	Providing & fixing 2 mm thick corrugated copper plate in expansion joint	1928.64																					1928.64	19.29	1947.93
70	14.18 (ii)	Providing & fixing 20 mm thick compressible fibre board in expansion joint	656.64																					656.64	6.57	663.21
71	14.18 (iii)	Providing and fixing in position 20 mm thick premoulded joint filler	373.44																					373.44	3.73	377.17
72	14.18 (iv)	Providing and filling joint sealing compound	18.24							0.000	162.000					0.001	0.000							18.25	0.18	18.44
73	15.2	Boulder Apron Laid in Wire Crates	3429.12			1.000	180.042																	3609.16	36.09	3645.25

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

HAULAGE CALCULATION SHEET FOR MINOR BRIDGES & SMALL CULVERTS

Sl. No.	Cl No.	Item	SOR Rate	Brick/pipe		Stone Boulder		Aggregate / Stone chips		Bitumen		Bitumen Emulsion		Lime/Filler		Sand		Steel		Cement		Structural Steel		Finished Rate	Labour Cess (1%)	Final Rate
				Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost	Quantity	Carriage Cost			
	13.5 G	RCC Grade M30																								
74	13.5 G (p)	Height upto 5m	9082.56					0.900	157.190							0.455	0.000			0.407	162.000			9289.91	92.90	9382.81
75	13.5 G (q)	Height 5m to 10m	9337.92					0.900	157.190							0.455	0.000			0.407	162.000			9545.27	95.45	9640.72
76	13.5 G (r)	Height above 10m	9701.76					0.900	157.190							0.455	0.000			0.407	162.000			9909.11	99.09	10008.20
	13.5 a (p)	PCC Grade M15 Height upto 5 M	7113.60					0.900	157.190							0.450	0.000			0.275	162.000			7299.68	73.00	7372.67
	13.1	Brick masonry work in 1:3 in sub-structure	8271.36	500.000	0.000											0.252	0.000			0.122	162.000			8291.19	82.91	8374.10
84	12.1 I . B . (b).(i)	Excavation for Structures (Ordinary soil) with dewatering - Mechanical Means Depth upto 3m	60.48																					60.48	0.60	61.08
85	12.1 I . B . (b).(i)	Depth 3m to 6m	69.12																					69.12	0.69	69.81
86	13.11	Supplying, fitting and fixing in position true to line and level cast steel rocker bearing	1121.28																					1121.28	11.21	1132.49
87	13.12	Supplying, fitting and fixing in position true to line and level forged steel roller bearing	1400.64																					1400.64	14.01	1414.65
88	15.10(A)	Curtain Wall-Stone masonry in cement mortar (1:3)	5096.64			1.100	180.042	0.790	157.190							0.315	0.000			0.153	162.000			5443.65	54.44	5498.09
89	14.1 (E) Case -II (ii) ('p)	PSC M40 T-Beam Height upto 5M	10967.04					0.900	157.190							0.450	0.000			0.430	162.000			11178.17	111.78	11289.95
90	16.1	Removal of existing cement concrete wearing coat	96.00																					96.00	0.96	96.96
91	16.17	Replacement of Expansion Joints complete as per drawings	4274.88					0.270	157.190							0.135	0.000			0.122	162.000			4337.09	43.37	4380.46
92	16.18	Replacement of Damaged Concrete Railing.	166.08																					166.08	1.66	167.74
93	14.4	Providing and laying Cement concrete wearing coat M-30 grade	13181.76					0.900	157.190							0.455	0.000	0.075	162.000	0.407	162.000			13401.25	134.01	13535.26
94	15.8 (A)	Laying Flooring by Rubble stone	6135.36			1.000	180.042									0.347	0.000			0.168	162.000			6342.67	63.43	6406.09
95	Non-Sch	Back Filling In Abutment, Wing Wall, Return Wall by Granular Material	1601.28					1.200	180.042															1817.33	18.17	1835.50
90	14.1 (F) (i) ('p)	PSC M45 For solid slab Height upto 5M	10857.60					0.900	180.042							0.430	0.000			0.465	162.000			11094.97	110.95	11205.92
70	16.9	Removal of defective concrete, cleaning the surface thoroughly	360.00					0.015	157.190							0.015	0.000			0.012	162.000			364.30	3.64	367.94
75	Non-Sch	Reinforced Cement Concrete Crash Barrier	4418.88					0.270	180.042							0.135	0.000	0.028	162.000	0.129	162.000			4492.93	44.93	4537.85
76	14.4	Providing and laying Cement concrete wearing coat M-30 grade	13181.76					0.900	157.190							0.455	0.000	0.075	162.000	0.407	162.000			13401.25	134.01	13535.26
77	14.3	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications	246102.72																	0.332	162.000			246156.43	2461.56	248618.00
78	12.38 (B) (ii)	RCC Pile Cap M30	8615.04	0.000	0.000	0.000	0.000	0.900	157.190	0.000	0.000	0.000	0.000	0.000	0.000	0.450	0.000	0.000	0.000	0.399	162.000	0.000	0.000	8821.20	88.21	8909.41
79	16.6	Patching of damaged concrete surface with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer and as approved by the Engineer	4431.36																					4431.36	44.31	4475.67
80	12.7	Stone Masonary 1:3 (RR)	4224.96	0.000	0.000	1.100	112.000	0.790	157.190	0.000	0.000	0.000	0.000			0.315	0.000	0.000	0.000	0.158	162.000	0.000	0.000	4497.95	44.98	4542.93
81	13.5 H (p) Case II	RCC M35 Height 5M to 10M	9902.40	0.000	0.000	0.000	0.000	0.900	157.190	0.000	0.000	0.000	0.000	0.000	0.000	0.450	0.000	0.000	0.000	0.422	162.000	0.000	0.000	10112.24	101.12	10213.36
82	14.1 (C) Case -II (i) ('r)	RCC M35 T-Beam Height 5M	10380.48	0.000	0.000	0.000	0.000	0.900	157.190	0.000	0.000	0.000	0.000	0.000	0.000	0.450	0.000	0.000	0.000	0.422	162.000	0.000	0.000	10590.32	105.90	10696.22

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 12AM, N.S.C. BOSE ROAD

Volume-VII: Cost Estimates

Abstract of Cost

GENERAL ABSTRACT OF COST

Bilasipara-Jalukbari Road (PKG-5: Km 48.655 to Km 67.556) & (km 0.000 km to km1.071)

	Length of Road (km)	:		**18.901**
	Length of CD & Bridge works (km)	:		**1.785**
	Length of Pavement excluding CD works (km)	:		**17.116**

Sl No	DESCRIPTION OF WORKS	TOTAL COST (IN Cr.)	COST PER KM. OF TOTAL ROAD LENGTH (IN Cr.)	% of Total Civil Works Cost
A.	**ROAD WORKS**			
1	Site Clearance	1.10	0.06	0.25%
2	Earthwork, Erosion Control	36.46	1.93	8.44%
3	Sub-Base & Base Courses	48.22	2.55	11.17%
4	Bituminous surface	36.24	1.92	8.39%
5	Traffic signs, Road marking & other road appurtenances	6.92	0.37	1.60%
6	Drainage & Protection Works			
a)	RCC Cover Drain	4.66	0.25	1.08%
b)	RE WALL	43.32	2.29	10.03%
c)	RR Masonry Chute Drain	0.25	0.01	0.06%
d)	Retaining Wall	5.67	0.30	1.31%
e)	Toe Wall	2.62	0.14	0.61%
f)	Ground Improvement Works (Sand Pile)	7.10	0.38	1.64%
g)	Protection Work(Stone Pitching)	1.93	0.10	0.45%
7	Project Facilities			
a)	Bus Bay with passenger shelter	1.34	0.07	0.31%
8	Junction	1.37	0.07	0.32%
9.1	Service Road	5.63	0.30	1.30%
9.2	Diversion Road	1.15	0.06	0.27%
10	Utility Duct	4.64	0.25	1.07%
	Total for Road Works=	**208.62**	**11.05**	**48.31%**
B.	**BRIDGES, CULVERTS & ROB**			
11	Major Bridges	12.58	0.67	2.91%
12	Minor Bridges	55.26	2.92	12.80%
13	ROB	114.17	6.04	26.44%
14	VUP	8.17	0.43	1.89%
15	Low Height Subway	4.22	0.22	0.98%
16	Culvert	28.80	1.52	6.67%
17	Repairing & Rehabilitation of Bridges	0.010	0.0005	0.00%
	Total for Structure Works=	**223.21**	**11.81**	**51.69%**
C.	**Cost of Civil Works in Cr.**	**431.83**	**22.85**	
	Cost Put to the Tender	**431.83**		
D.	**Maintenance for 5 years , i.e 2.5% on Civil cost (C)**	10.80		
E.	GST @ 12% of (C)	51.82		
F.	Contingencies @ 2.8% of **(C)**	12.09		
G.	Supervision Consultancy Charges @ 3% of (C)	12.95		
H.	Agency Charges @ 3% of **(C)**	12.95		
I.	Escalation Cost @ 5% on (C) during Construction Period (For 1 Years)	21.59		
J.	**Total Centages and contigencies/GST (J= D+E+F+G+H+I)**	**122.20**	**6.47**	
	Departmental Cost			
a.	LA Cost for Construction	45.63		
b.	Compensation for structures	25.10		
c.	Utility Shifting Cost	5.59		
d.	Environmental Mitigation Cost	1.54		
K.	**Total Departmental Cost(K=a+b+c+d)**	**77.86**		
L.	**Total Capital Cost/(L=C+J+K)**	**631.89**	**33.43**	

Bill for Road Works

BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 1. SITE CLEARANCE

SL. NO.	SOR Item No.	Ref.of MoRT &H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1.1	2.1	201	**Cutting of Trees, including Cutting of Trunks, Branches and Removal** (Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 m and earth filling in the depression/pit.)				
	(i)		**Girth from 300 mm to 600 mm**	Each	698	163.62	114,206.76
	(ii)		**Girth from 600 mm to 900 mm**	Each	542	318.15	172,437.30
	(iii)		**Girth from 900 mm to 1800 mm**	Each	287	580.75	166,675.25
	(iv)		**Girth above 1800 mm**	Each	137	1,070.60	146,672.20
1.2	2.3	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.)				
	(ii)		**By Mechanical Means**				
	A		*In area of light jungle*	hectare	68.40	46,329.71	3,168,952.16
	2.4		**Dismantling of Structures** (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres)				
	c.		*Prestressed / Reinforced cement concrete grade M-20 & above*				
	2.4 (I) .ii b		**By Mechanical Means for items No. 202(b) & (c)**				
			Prestressed / Reinforced cement concrete grade M-20 & above	cum	456.03	667.61	304,450.19
1.3	2.5	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)				
	II.		**By Mechanical Means**				
	a.		*Bituminous courses*	cum	7349.00	242.40	1,781,397.60
	2.5 I. b.		*Granular courses (manual means)*	cum	14698.00	349.46	5,136,363.08
			Total of Bill No.-1				**10,991,154.54**

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 2. EARTHWORK, EROSION CONTROLL AND DRAINAGES

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2.1	**3.6**	**301**	**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with disposal upto 1000 metres.** (Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road within all lifts and lead upto 1000m)	cum	91962.00	83.83	7,709,174.46
2.2	**3.16.A**	**305**	**Embankment Construction with Material Obtained from Borrow Pits** (Construction of embankment with approved material 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(including compensation of earth.) (Including cost of testing oe materials at site and laboratory as directed by the deptt.)				
			from private land	cum	972904.60	268.66	261,380,549.84
2.3	**3.17**	**305**	**Construction of Embankment with Material Deposited from Roadway Cutting** (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)	cum	64373.40	140.39	9,037,381.63

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2.4	**3.18a**	**305**	**Construction of Subgrade and Earthen Shoulders** (Construction of subgrade and earthen shoulders with approved material 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) (including compensation of earth.)(a),(Including cost of testing of naterials at site and laboratory as directed by the deptt.)				
			from private land	cum	189795.92	325.22	61,725,429.10
2.5	**3.22**	**307**	**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 of 0.23 litres per sqm and laying and fixing jute netting, including watering for 3 months all as per clause 308)	sqm	124672.90	127.26	15,865,873.25
2.6	**4.14**	**407**	**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 407)	cum	25676.86	261.59	6,716,809.81
2.7	**3.24 A**		**Surface Drains in Soil (Mechanical means)** 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)	Rm	31338.700	69.69	2,183,994.00
			Total of Bill No.-2				**364,619,212.09**

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 3. SUB-BASES, BASES (NON- BITUMINOUS) AND SHOULDERS

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
	4.1	**401**	**Granular Sub-Base with Close Graded Material (Table:- 400-1)**				
3.1			**Plant Mix Method** (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(with an initial lead of 5 km) (Including cost of testing of materials at sitf and laboratory as directed by the dept.)				
	(i)		*for grading- I Material*	cum	15954.21	2,487.05	39,678,917.98
			for grading-III Material	cum	6720.77	2,353.88	15,819,886.09
3.2	***4.12***	**406**	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. (including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)	cum	26386.84	2,520.20	66,500,114.17
3.3	***4.3***	***403***	**Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4in 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	67496.85	3,672.75	247,899,055.84
		(ii)	For Base course	cum	25437.21	3,186.48	81,055,160.92
3.4	Non-Sch		GSB Reuse	cum	8819.00	826.18	7,286,081.42
3.5	Non-Sch		RAP	cum	7209.97	1,922.09	13,858,211.24
3.6	Non-Sch		Geocell	sqm	80078.43	100.00	8,007,843.00
3.7			Recycling of Existing Pavement(Including Plant & Machinery, Labour) Lumsum				2,100,000.00
			Total of Bill No.-3				**482,205,270.66**

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 4. BITUMINOUS SURFACE COURSE

SL.NO	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
4.1	5.1 A (i)	502	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 1.0 kg/sqm using mechanical means.)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
			with bitumen emulsion-CSS-1 h	sqm	326795.93	25.35	8,284,276.83
4.2	5.2	503	**Tack coat** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	(I)		**with bitumen emulsion-CSS-1 h**				
	(a)		Normal bituminious surface	sqm	21543.00	9.12	196,472.16
	(c)		Granular surface treated with primer	sqm	326795.93	17.34	5,666,641.43
4.3	5.6	507	**Dense Graded Bituminous Macadam** (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of 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. 507 complete in all respects.)(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	A.		**With hydrated lime/cement as filler(refer table 500-9 of MoRT&H specification)**				
	(I)		***With 40/60 or VG -40 grade bitumen***				
	(i)		*for Grading II (19 mm nominal size)*	cum	21953.61	9,209.29	202,177,161.04

SL.NO	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
4.4	5.6	507	**Bituminous Concrete** (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of 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. 509 complete in all respects)(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	A.		**With hydrated lime/cement as filler(refer table 500-9 of MoRT&H specification)**				
	(I)		***With 40/60 or VG -40 grade bitumen***				
	(i)		*for Grading II (13 mm nominal size)*	cum	13933.55	10,483.41	146,071,117.41
			Total of Bill No.-4				**362,395,668.87**

BILL OF QUANTITIES & COST ESTIMATE
BILL NO.5 TRAFFIC SIGNS, ROAD MARKING AND OTHER ROAD APPURTENANCES

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
5.1	*8.1*	408	**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, all complete as per clause 408)				
	B		***Using Concrete Batching and Mixing Plant***	metre	33138	377.81	12,519,867.78
5.2	*8.4*		**Retro- reflectorised Traffic signs** (Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2.0 mm thick fixed on an angle iron of 25x25x4mm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing and signs(All steel work must be Tata/Sail/or any other approved brand)				
	(i)		**90 cm equilateral triangle**	each	89	2,640.55	235,008.95
	(iii)		**60 cm circular**	each	10	2,591.06	25,910.60
	(iv)		**80 mm x 60 mm rectangular**	each	8	2,736.50	21,892.00
	(vii)		**90 cm high octagon**	each	25	2,878.91	71,972.75
5.3	*8.5*	801	**Direction and Place Identification signs upto 0.9 sqm size board**.(Providing and erecting direction and place identification retro-reflectorised sign asper IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm fixed on an angle iron of 25x25x4mm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing and signs(All steel work must be Tata/Sail/or any other approved brand)	sqm	15	3,396.86	50,952.90

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
5.5	*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	8	4,085.04	32,680.32
	(ii)		Ordinary Kilometer stone (Precast)	each	22	2,548.65	56,070.30
	(iii)		Hectometer stone (Precast)	each	58	643.84	37,342.72
5.6	*8.54*		**Road Delineator** Providing metal tubular delineator (50mm dia & 1.25mm thick)with 15 cm reflector made of heigh intensity grade retro reflectorised sheeting around the pipe at top covered with wire mesh of 20cm length with 2 nos of similar reflective bends and bottom fastner M.S.angle including firmly fixing the delineator to the ground by means of CC (M-15) foundation of size (25x25x25cm),25cm below ground to the true line and level as directed by the deptt. With six months replacement warranty and free maintenance. b) 750 mm ht.	each	613	1,270.58	778,865.54
5.7	*8.16*	806	**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	178	646.71	115,114.38

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
5.8	***iv)***		**pole Height 6m:**The materials of the pole as follows:Conforming to grade S355JO,Base plate Fe 410 conforming to IS 226/IS 2062, Foundation Bolts:-6.8 Gr. As per IS 1367, Plole sections:- The octagonal poles shall be in single piece with single longitudinal welding join.Galvanization:-The pole shall be hot dip galvanized as per IS 2629/IS 2633/IS 4759 standards with average coating thickness of 65 micron.The galvanizing shal be done in single dipping. Door opening:-The octagonal poles shall have door of approxinate 500 mm length at the elevation of 500 mm from the base plate.The door shall be vandal resistance and shall be weather proof to ensure saefty of of inside connections.The door shall be flush with the exterior surface and shall have suitable locking arrangement.The pole shall be adequately strengthened at the location of the door compensate for the loss in the section.There shall also be suitable arrangement for the purpose of earthing,smart pack junction box with 6 MCB & Terminals for mounting inside base compartment of pole.Top dia(A/F) 70 Bottom Dia. (A/F) 130, Sheet thickness 3 mm, Base Plate Dimensions(LXBXT) 220x220x12, Foundation Bolt, Bolt size:-(noxdia) 4x20 dia, pitch circle dia.(PCD) 205,Bolt length 600,Projected Bolt Length 100, Anchor plate thickness:- 4 mm,Pole Foundation :- The octagonal poles shall be bolted on a pre - cast foundation with a set of four foundation bolts for greater rigidity. Foundation :- The foundation shall be done with (i) Earth work:- 2.04 cubic Meters.(ii)RCC:- 1:1.5:3 proportion 0.65 cubic meters. (iii0 Steel:-22.43 kg .(iv0 Shuttering:-4.32 square meters.=22.43 kg.	each	177	29,274.85	5,181,648.45
5.9	**8.13**	**803**	**Road Marking with Hot Applied Thermoplastic Compound** (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	13800.000	661.55	9,129,390.00

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
5.10	8.35		**Road Markers/Road Stud with Lense Reflector** Providing and fixing of road stud 100x 100 mm, die-cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973	nos	1236	683.77	845,139.72
5.11	8.23 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, 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 810	metre	11081.000	3,613.76	40,044,074.56
			Total of Bill No.-5				**69,169,352.15**

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BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 6. DRAINAGE & PROTECTION WORK

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
RCC Cover Drain							
6.1	**3.13 (I) . A**	**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.) i) Ordinary soil A. a)Mechanical Means, with dewatering upto 3 m depth	cum	5727.59	61.08	349,841.20
6.2	***12.8***	**1500,1700 & 2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
	(a)		**PCC Grade M15**	cum	488.860	6,979.01	3,411,758.83
6.3	***13.5***	**1500,1700 & 2200**	*Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications*				
	N(A).f.		**Without plasticiser**				
			RCC Grade M25				
	Case II		*With Batching Plant, Transit Mixer and Concrete Pump*	cum	2253.560	9,336.67	21,040,746.05
6.4	**13.6 (a) (i)**	**1600 & 2300**	Reinforcement in Substructure :Supplying, fitting and placing un-coatedTMT bar reinforcement in foundation complete as per drawing and technical specifications a) From primary sources: TATA/SAIL/Esser Steel/Jindal steel/Shyam steel i) TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	tonne	157.75	64,921.69	10,241,396.60
6.5	***13.8***	**2200 & 2706**	**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	6370.000	1,812.33	11,544,542.10
						Total=	**46,588,284.78**

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
RR Masonry Chute Drain							
6.6	**3.13 (I) B. (a)**	**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.) i) Ordinary soil A. a)Manual Means, with dewatering upto 3 m depth	cum	471.980	61.08	28,828.54
6.7	**1500, 1700 & 2100**		Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.				
	B		**Without plasticiser**				
			PCC Grade M20	cum	292.540	7434.12	2,174,777.46
6.8	**15.4**	**2504**	Stone Pitching	cum	134.850	2273.70	306,608.45
					Total=		**2,510,214.45**

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SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
For RE Wall							
6.9	***3.18a***	**305**	**Embankment Filling by Subgrade Material**	cum	139207.04	325.22	45,272,913.55
6.10			**Embankment Filling by Sand**	cum	139207.05	1,176.20	163,735,332.21
6.11	**7.5**	**3100**	Reinforced Earth Stuctures (Reference to MORT&H's specifications 3100). With reinfocing element of synthetic geogrids				
	(i)		Facing Element of RCC	sqm	39040.70	1,574.57	61,472,315.00
	(ii)		With reinforcing element of synthetic geogrids	sqm	39040.70	595.90	23,264,353.13
6.12	***12.8***	**1500,1700 & 2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
	(a)		**PCC Grade M15**	cum	996.000	6,979.01	6,951,093.96
	(E)		**RCC Grade M25**				
	Case II		*With Batching Plant, Transit Mixer and Concrete Pump*	cum	4182.024	8,753.04	36,605,423.35
6.13	**12.4 0 (a). (i)**	**1600 & 2300**	**Supplying, fitting and placing HYSD bar reinforcement in foundation**	tonne	292.74	64,846.06	18,983,035.60
	13.10		**Filter Media**	cum	23421	2,288.73	53,604,345.33
6.14	***8.22 (ii)***	**809**	**Reinforced Cement Concrete Crash Barrier** (Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel 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 MORT&H circular No. RW/NH - 33022/1/94-DO III dated June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified	metre	4979	4,674.72	23,275,430.88
					Total=		**433,164,243.01**

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
For Retaining Wall							
6.15	**3.13 (I) . A**	**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.) i) Ordinary soil A. a)Mechanical Means, with dewatering upto 3 m depth	cum	4716.95	61.08	288,111.31
6.16	**12.7**	**1400**	**Stone masonry work in cement mortar 1:3 for foundation**				
	B		**RR Masonry**	cum	1249.50	4,542.93	5,676,391.04
6.17	***12.8***	**1500,1700 & 2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
	(a)		**PCC Grade M15**	cum	1002.110	6,979.01	6,993,735.71
	(e)		**RCC Grade M25**				
	Case II		*With Batching Plant, Transit Mixer and Concrete Pump*	cum	807.680	8,753.04	7,069,655.35
6.18	**12.4**		**Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.**	tonne	95.210	64,846.06	6,173,993.37
6.19	***13.5***	**1500,1700 & 2200**	*Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications*				
	N(A).f.		**Without plasticiser**				
			PCC Grade M20				
			With Batching Plant, Transit Mixer and Concrete Pump	cum	43.520	8,174.13	355,738.14
			RCC Grade M25				
	Case II		*With Batching Plant, Transit Mixer and Concrete Pump*	cum	568.390	9,336.67	5,306,869.86

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
6.20	13.6 (a) (i)	1600 & 2300	Reinforcement in Substructure :Supplying, fitting and placing un-coatedTMT bar reinforcement in foundation complete as per drawing and technical specifications a) From primary sources: TATA/SAIL/Esser Steel/Jindal steel/Shyam steel i) TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	tonne	65.68	64,921.69	4,264,056.60
6.21	12.7	1400 & 2200	**Stone masonry work in cement mortar 1:3 for substructure**				
	B		**RR Masonry**	cum	1749.30	4,542.93	7,946,947.45
			CR Masonry	cum	305.64	5,434.13	1,660,887.49
6.22	*13.8*	2200 & 2706	**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	1760.85	1,812.33	3,191,241.28
6.23	13.10	710.1.4 of IRC:78 & 2200	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	3409.62	2,288.73	7,803,699.58
					Total=		**56,731,327.18**

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
Toe Wall							
6. 24	**3.13 (I) . A**	**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.) i) Ordinary soil A. a)Mechanical Means, with dewatering upto 3 m depth	cum	1846.56	61.08	112,787.88
6.25	***12.8***	**1500,1700 & 2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
	(a)		**PCC Grade M15**	cum	205.17	6979.01	1,431,883.48
6.26	**13.5 F (p) Case II**		**RCC Substructure M25 Height 5M**	cum	1858.63	8753.04	16,268,662.74
6.27	**12.4**		**Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.**	tonne	130.10	64846.06	8,436,472.41
					Total=		**26,249,806.51**
Ground Improvement Works (Sand Pile)							
6.28	**Non Sche**		**Driven cast-in-place vertical Sand Pile complete as per Drawing and & Technical Specification**	m	53220.00	1333.20	70,952,904.00
					Total=		**70,952,904.00**

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
River Protection Work (Stone Pitching)							
6.29	15.4		Providing and laying Pitching on slopes laid over prepared filter media including				
	A		Stone/Boulder	cum	6117.05	1920.34	11,746,815.80
6.30	***15.5***	**2504**	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum	3058.53	2429.87	7,431,830.29
6.32	***12.8***	**1500,1700 & 2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
	(a)		**PCC Grade M15**	cum	5.73	6979.01	39,989.73
	(b)		**PCC Grade M20**	cum	14.06	7738.78	108,807.25
						Total =	**19,327,443.07**
			Total of Bill No.-6				**655,524,223.00**

BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 7. BUS- BAY WITH PASSENGER SHELTER & TRUCK LAY BYE

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
A. Bus Bay							
7.1	***4.3***	***403***	**Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4in 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	1004.000	3,672.75	3,687,441.00
		(ii)	For Base course	cum	502.000	3,186.48	1,599,612.96
7.2	**4.12**	**406**	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. (including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)	cum	502.000	2,520.20	1,265,140.40
7.3	**5.1 A (i)**	**502**	Providing and applying **Primer coat** over WMM layer using bitumen emulsion (Grade SS-1) @ 0.85Kg / sqm as per drawings and Technical specifications clause 502 and as directed by the Engineer.	sqm	5020.000	25.35	127,257.00
7.4	**5.2**	**503**	**Tack coat** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	(I)		**with bitumen emulsion-CSS-1 h**				
	(c)		Granular surface treated with primer	sqm	5020.00	17.34	87,046.80

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
7.5	**3.18a**	**305**	**Construction of Subgrade and Earthen Shoulders** (Construction of subgrade and earthen shoulders with approved material 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) (including compensation of earth.)(a),(Including cost of testing of naterials at site and laboratory as directed by the deptt.)				
			from private land	cum	2510.00	325.22	816,302.20
7.6	**5.6 A (I)**	**505**	**Dense Graded Bituminous Macadam** (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of 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. 507 complete in all respects.)(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	(ii)		**for Grading II (With 40/60 or VG -40 grade bitumen) (for Grading II (40 mm nominal size)**	cum	301.200	9,209.29	2,773,838.15

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
7.7	5.8 A (I)	507	**Bituminous Concrete** (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of 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. 509 complete in all respects)(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	(Ii)		**for Grading-I (19 mm nominal size)**	cum	200.800	10,483.41	2,105,068.73
7.8	*8.1*	408	**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, all complete as per				
	A		***Using Concrete Mixer***	metre	252	377.81	95,208.12
7.9	*4.13*	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	51	193.92	9,889.92

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
Passenger Shelter							
7. 10	**3.13 (I) . (A)**	**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.) i) Ordinary soil A. a)Manual Means, with dewatering upto 3 m depth	cum	21.120	61.08	1,290.01
7.11	**12.5**	**1300**	Brick masonry (Brick masonry work in cement mortar 1:3 in foundation complete excluding pointing and plastering, as per drawing and technical specifications	cum	6.080	8,161.65	49,622.83
7.12	**12.5**	**1300**	Brick masonry (Brick masonry work in cement mortar 1:3 in Super Structure complete excluding pointing and plastering, as per drawing and technical specifications	cum	17.520	8,161.65	142,992.11
7.13	**12.8 C**	**1500, 1700 & 2100**	Plain/Reinforced cement concrete in open foundation -RCC M25-Without plasticiser(With Batching Plant, Transit Mixer and Concrete Pump)	cum	2.280	8,753.04	19,956.93
7.14	**12.4 0 (a). (i)**	**1600**	Reinforcement in foundation-TMT Bar (From primary sources: TATA/SAIL/Esser Steel/Jindal steel/Shyam steel)-TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	Tonne	0.160	64,846.06	10,375.37

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
7.15	**12.8 A (a)**	**1500,1700 & 2200**	Plain/Reinforced cement concrete in super-structure complete as per drawing and Technical Specifications section 1500,1700& 2200 and as directed by the Engineer. PCC M15	cum	4.040	6,979.01	28,195.20
7.16	**14.1 A case -II(i) a).**	**1500 &1600,1700, 2300**	Furnishing and Placing Reinforced/ Prestressed cement concrete in super-structure as per drawing and Technical Specification section 1500,1700 & 2300 and as directed by the Engineer. RCC M25	cum	14.720	10,116.61	148,916.50
7.17	**14.2 (a). (i**	**1600 & 2300**	Supplying, fitting and placing HYSD/TMT bar reinforcement in super-structure complete as per drawing and technical specifications section 1600 & 2300 and as directed by the Engineer.	Tonne	1.120	65,989.22	73,907.93
7.18	***13.3***	**1300 & 2200**	Plastering with cement mortar (1:3) on brick work in super-structure as per Technical specifications	sqm	249.480	1,497.29	373,543.91
			Total of Bus bay with passenger shelter=				**13,415,606.07**
			Total of Bill No.-7				**13,415,606.07**

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BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 8. JUNCTION

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
8.1	*4.3*	*403*	**Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4in 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	1100.00	3,672.75	4,040,025.00
		(ii)	For Base course	cum	550.00	3,186.48	1,752,564.00
8.2	**5.1 A**	**502**	**Prime coat**				
			Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	(i)		**with bitumen emulsion-CSS-1 h**	sqm	5500.00	25.35	139,425.00
8.3	**5.2 (I)**	**503**	**Tack coat** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
			with bitumen emulsion-CSS-1 h				
	(b)		Granular surface treated with primer	sqm	5500.00	17.34	95,370.00

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
8.4	***4.12***	**406**	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. (including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)	cum	550.00	2,520.20	1,386,110.00
8.5	***5.8***		**Bituminous Concrete** (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of 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. 509 complete in all respects)(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	A.		**With hydrated lime/cement as filler(refer table 500-9 of MoRT&H specification)**				
	(I)		***With 40/60 or VG -40 grade bitumen***				
	(ii)		*for GradingII(13 mm nominal size)*	cum	220.000	10,483.41	2,306,350.20

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
8.6	***5.6***		**Dense Graded Bituminous Macadam** (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of 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. 507 complete in all respects.)(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	A.		**With hydrated lime/cement as filler(refer table 500-9 of MoRT&H specification)**				
	(I)		***With 40/60 or VG -40 grade bitumen***				
	(i)		*for Grading II (19 mm nominal size)*	cum	330.00	9,209.29	3,039,065.70
8.7	***3.18a***	**305**	**Construction of Subgrade and Earthen Shoulders** (Construction of subgrade and earthen shoulders with approved material 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) (including compensation of earth.)(a),(Including cost of testing of naterials at site and laboratory as directed by the deptt.)				
			from private land	cum	2750.00	325.22	894,355.00
			Total of Bill No.-8				**13,653,264.90**

BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 9.1.1 SERVICE ROAD

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
9.1.1	***4.3***	***403***	**Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4in 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	5020.68	3,672.75	18,439,702.47
		(ii)	For Base course	cum	2510.34	3,186.48	7,999,148.20
	4.1	**401**	***Granular Sub-base with Close Graded Material (Table:- 400-1)***				
9.1.2	*3.18a*	**305**	**Construction of Subgrade and Earthen Shoulders** (Construction of subgrade and earthen shoulders with approved material 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) (including compensation of earth.)(a),(Including cost of testing of naterials at site and laboratory as directed by the deptt.)				
			from private land	cum	12551.70	325.22	4,082,063.87
9.1.3	**5.1 A**	**502**	**Prime coat**				
			Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	(i)		**with bitumen emulsion-CSS-1 h**	sqm	25103.40	25.35	636,371.19

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SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
9.1.4	5.2 (I)	503	**Tack coat** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
			with bitumen emulsion-CSS-1 h				
	(b)		Granular surface treated with primer	sqm	25103.40	17.34	435,292.96
9.1.5	*4.12*	406	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. (including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)	cum	2510.34	2,520.20	6,326,558.87

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
9.1.7	***5.8***		**Bituminous Concrete** (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of 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. 509 complete in all respects)(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)				
	(ii)		**for Grading-II (With 40/60 or VG -40 grade bitumen) (for Grading II (13 mm nominal size)**	cum	1004.14	10,483.41	10,526,811.32
9.1.8	***8.22***		**Reinforced Cement Concrete Crash Barrier (M20)** Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel 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 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified	metre	2117.12	3,724.73	7,885,700.38
			Total of Bill No.-9.1				**56,331,649.26**

BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 9.2 APPROACH ROAD & DIVERSION ROAD

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
9.2.1	**2.5**		**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)				
	II.		**By Mechanical Means**				
	a.		*Bituminous courses*	cum	237.50	242.40	57,570.00
	b.		*Granular courses (manual means)*	cum	831.25	349.46	290,488.63
9.2.2	**3.6**	**301**	**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with disposal upto 1000 metres.** (Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road within all lifts and lead upto 1000m)	cum	5300.00	83.83	444,299.00
9.2.3	*A*		**Plant Mix Method** (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(with an initial lead of 5 km) (Including cost of testing of materials at sitf and laboratory as directed by the dept.)				
	(i)		*for grading- I Material*	cum	177.2	2,487.05	440,705.26
9.2.4	**3.16.A**	**305**	**Embankment Construction with Material Obtained from Borrow Pits** (Construction of embankment with approved material 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(including compensation of earth.) (Including cost of testing oe materials at site and laboratory as directed by the deptt.)				
			from private land	cum	625.00	268.66	167,912.50
9.2.5	***SOR Ref No. M-007(Page No-251)***		**Moorum** for Diversion road	cum	93.75	687.37	64,440.94

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
9.2.6	*3.18a*	**305**	**Construction of Subgrade and Earthen Shoulders** (Construction of subgrade and earthen shoulders with approved material 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) (including compensation of earth.)(a),(Including cost of testing of naterials at site and laboratory as directed by the deptt.)				
			from private land	cum	590.70	325.22	192,107.45
9.2.7		**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.)(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)	cum	177.21	4,890.19	866,590.57
9.2.8		**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 .(including carriage up to initial lead of 5.0 km from quarry and carriage of mixed naterials up to 10.0 km initial lead from mixing plant)	cum	295.35	10,239.36	3,024,194.98
9.2.9	**8.13**	**803**	**Road Marking with Hot Applied Thermoplastic Compound** (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	100.000	661.55	66,155.00

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
RCC Cover Drain							
9.2.10	**3.13 (I) . A**	**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.) i) Ordinary soil A. a)Mechanical Means, with dewatering upto 3 m depth	cum	493.02	61.08	30,113.66
9.2.11	***12.8***	**1500,1700 & 2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
	(a)		**PCC Grade M15**	cum	39.840	6,979.01	278,043.76
9.2.12	***13.5***	**1500,1700 & 2200**	*Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications*				
	N(A).f.		**Without plasticiser**				
			RCC Grade M25				
	Case II		*With Batching Plant, Transit Mixer and Concrete Pump*	cum	194.220	9,336.67	1,813,368.05
9.2.13	**13.6 (a) (i)**	**1600 & 2300**	Reinforcement in Substructure :Supplying, fitting and placing un-coatedTMT bar reinforcement in foundation complete as per drawing and technical specifications a) From primary sources: TATA/SAIL/Esser Steel/Jindal steel/Shyam steel i) TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	tonne	13.60	64,921.69	882,934.98
9.2.14	***13.8***	**2200 & 2706**	**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	998.000	1,812.33	1,808,705.34

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
Sump Pit							
9.2.15	**3.13 (I) . A**	**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.) i) Ordinary soil A. a)Mechanical Means, with dewatering upto 3 m depth	cum	23.87	61.08	1,457.98
9.2.16	***12.8***	**1500,1700 & 2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
	(a)		**PCC Grade M15**	cum	0.600	6,979.01	4,187.41
9.2.17	***13.5***	**1500,1700 & 2200**	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications				
	N(A).f.		**Without plasticiser**				
			RCC Grade M30				
	Case II		*With Batching Plant, Transit Mixer and Concrete Pump*	cum	8.140	9,382.81	76,376.07
9.2.18	**13.6 (a) (i)**	**1600 & 2300**	Reinforcement in Substructure :Supplying, fitting and placing un-coatedTMT bar reinforcement in foundation complete as per drawing and technical specifications a) From primary sources: TATA/SAIL/Esser Steel/Jindal steel/Shyam steel i) TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	tonne	1.42	64,921.69	92,188.80
Pump with all Accessories							
9.2.19	**Non Sche**	**Lump sum cost**	Supply, fittings and fixing of Dewatering submersible type pump set including electric motor of 4000 liter per minute capacity, 10 mwc head with 15 kw rated motor including supply and installation of automation star delta panel and water level sensor, complete with all electrics. **(Lumpsump Cost of Pump With all Accessories)**	Nos	2.00	450,000.00	900,000.00
			Total of Bill No.-9.2				**11,501,840.38**

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

BILL OF QUANTITIES & COST ESTIMATE
BILL NO. 10. UTILITY DUCT

SL. NO.	SOR Item No.	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1	***Non-Sch***		Laying of utility duct of HDPE pipe (Group of 3 pipes 90mm dia.)	m	54960	843.35	46,350,516.00
						Total Amount=	**46,350,516.00**

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

Bill for Structure Works

DETAILED COST ESTIMATES
BILL NO. 11 FOR MAJOR BRIDGES

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
B.1 :: FOUNDATION							
11.1	***12.1***	**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***				
	B.		**Mechanical Means**				
	(b)		**with dewatering**				
	(i)		*Depth upto 3 m*	cum	1795.340	63.63	1,14,237.48
	(ii)		*Depth 3 m to 6 m*	cum	224.000	72.72	16,289.28
11.2	***12.8***	**1500,1700 &2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
	(a)		**PCC Grade M15**	cum	94.500	7,261.97	6,86,256.17
	12.38		**RCC Pile Cap M30**				
	(A) III.(ii)		***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	1061.740	9,271.96	98,44,410.81
11.3	***12.22***	**1200 & 1900**	**Providing steel liner 10 mm thick f**or curbs and 6mm thick for steining of wells including fabricating and setting out as per detailed drawing	tonne	9.590	1,01,343.50	9,71,884.17
11.4	***12.25A***	**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	1734.000	17,494.79	3,03,35,965.86
11.5	***12.40***	**1600**	**Reinforcement in foundation :Supplying, fitting and placing un-coatedTMT bar reinforcement in foundation complete as per drawing and technical specifications**				
	(a)		From primary source**s:** TATA/SAIL/Esser Steel/Jindal steel/Shyam steel				
	(i)		TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	tonne	320.977	67,540.82	2,16,79,049.78
TOTAL FOR B.1 :: FOUNDATION							**6,36,48,093.55**

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
B.2 :: SUBSTRUCTURE							
11.6	***13.5 (N) .A .g.(i)-case II***	**1500,1700 &2200**	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications				
			RCC Grade M30				
			Height upto 5m				
			With Batching Plant, Transit Mixer and Concrete Pump	cum	456.81	9,765.03	44,60,763.35
	13.5 (N) .A .g.(ii)-case II		***Height 5m to 10m***				
			With Batching Plant, Transit Mixer and Concrete Pump	cum	186.16	10,033.69	18,67,871.73
	h.		***RCC Grade M35***				
	(i)		***Height 5m to 10m***				
	Case II		***With Batching Plant, Transit Mixer and Concrete Pump***	cum	42.060	10,630.08	4,47,101.16
11.7	***13.6 (a) (i)***	**1600 &2200**	**Supplying, fitting and placing TMT bar** reinforcement in sub-structure complete as per drawing and technical specifications				
			From primary source**s:** TATA/SAIL/Esser Steel/Jindal steel/Shyam steel				
			TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	tonne	95.904	67,619.60	64,84,990.12
11.8	***13.8***	**2200 &2706**	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	378.000	1,887.84	7,13,603.52
11.9	***13.9***	**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	245.700	2,076.18	5,10,117.43
	B		*Sandy material*	cum	1019.540	2,410.87	24,57,978.40

C.E. TESTING CO. PVT. LTD. KOLKATA 700 092 124A, N.S.C. BOSE ROAD

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
11.10	***13.10***	**710.1.4 of IRC:78 & 2200**	**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	285.880	2,376.15	6,79,293.76
11.11	***13.13***	**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	9600.000	459.55	44,11,680.00
11.12	***13.14***	**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 Technical Specifications.	cubic centimetre	639150.000	1.26	8,05,329.00
TOTAL FOR B.2 :: SUBSTRUCTURE							**2,28,38,728.48**
B.3 :: SUPERSTRUCTURE							
11.13	***14.1 A. III.case - II(i) a***	**1500 ,1600 & 1700**	Furnishing and Placing Reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specification				
			RCC Grade M 30				
			Using Batching Plant, Transit Mixer and Concrete Pump.				
			For solid slab super-structure				
			Height upto 5m	cum	15.250	10,643.72	1,62,316.73
	14.1 A. VI .(i) a).		**PSC Grade M-45**				
			For solid slab/voided slab super-structure				
			Height upto 5m	cum	891.960	11,642.07	1,03,84,260.76
11.14	***14.3***		**High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications**	tonne	44.000	2,58,974.82	1,13,94,892.08
11.15	***14.2 (a). (i)***		Supplying, Fitting, Fixing TMT Bar-From primary sources: TATA/SAIL/Esser Steel/Jindal steel/Shyam steel (TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	tonne	136.082	68,731.61	93,53,134.95

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SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
11.16	***14.5***	**515 & 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 500-29, 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 515.	sqm	1287.440	413.32	5,32,124.70
11.17	***5.8 (ii)***		Providing and laying Bituminious wearing course comprising of tack coat with bitumen emulsion CSS-1 h as per APWD SOR item no 5.2 & MoRT&H Specification Nos 503,6mm thick mastic asphalt as per APWD SOR item no 14.5& MoRT&H Specification no 515 &2702 and 2 layer of 25 mm thick asphalt concrete including of close Graded Premix Surfacing (CGPS) material with Type -a aggregate as per APWD SOR item no 5.11 & MoRT &H Specification Nos 512 including all lead and lift as directed.	cum	51.500	10,483.41	5,39,895.62
11.18	**5.2**		**Tack coat** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.(Including cost of testing of materials at sitfe and laboratory as directed by the depttt.)	sqm	1,287.44	9.12	11,741.45
11.19	**14. 4**	**515 & 2702**	Providing and laying Cement concrete wearing coat M-30 grade including reinforcement complete as per drawing and Technical Specifications-With batching plant	cum	15.250	14,089.99	2,14,872.35
11.20	***14.6***	**1500,1600,1700 & 2703**	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	135.520	2,135.74	2,89,435.48
11.21	***14.9***	**2705**	Drainage Spouts complete as per drawing and Technical specification	each	20.000	12,618.94	2,52,378.80
11.22	***14.10***	**2700**	PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification	cum	24.670	6,991.29	1,72,475.12

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
11.23	*8.22 (ii)*	809	**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-40 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 MORT&H circular No. RW/NH - 33022/1/94-DO III dated June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified)	metre	271.04	4,717.58	12,78,652.88
11.24	*14.11(a)*	1500,1600,1700 & 2704	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification				
			With TATA make TMT CRS(Fe-500) grade rebar	cum	50.610	12,506.28	6,32,942.83
11.25	*14.18*	2605	**Filler joint**				
	(i)		*Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.*	metre	48.200	2,029.09	97,802.14
	(ii)		*Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.*	metre	48.200	690.84	33,298.49
	(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	48.200	392.89	18,937.30
	(iv)		*Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight*	metre	48.200	19.20	925.44
11.26	*14.22*	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	50.000	14,606.62	7,30,331.00
TOTAL FOR B.3 :: SUPERSTUCTURE							**3,61,00,418.12**

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
B.4 :: PROTECTION WORKS							
11.27	***15.4***	**2403**	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	820.670	1,992.77	16,35,406.56
11.28	***15.5***	**2504**	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum	410.340	2,522.02	10,34,885.69
11.29	***15.11***	**2505**	Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.	cum	193.240	2,019.03	3,90,157.36
TOTAL FOR B.4 :: PROTECTION WORKS							**30,60,449.60**
B.5::MISCELLANIOUS							
11.30	**8.8**	**803**	Painting 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	1068.820	58.58	62,611.48
11.31	**8.4 (iv)**		Citizen information Board NH Project	nos	2.00	2736.50	5,473.00
11.32	**12.5**		Brick work at median	cum	8.76	8500.62	74,465.43
TOTAL FOR B.5 :: MISCELLANIOUS							**1,42,549.91**
			Total of Bill No.11				**12,57,90,239.65**

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DETAILED COST ESTIMATES
BILL NO. 12 FOR MINOR BRIDGES

SL. NO.	SOR Ref. No	Ref.of MoRT&H	DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
B.1 :: FOUNDATION							
12.1	***12.1***	**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***				
	B.		**Mechanical Means**				
	(b)		**with dewatering**				
	(i)		*Depth upto 3 m*	cum	14226.484	61.08	868,953.65
	(ii)		*Depth 3 m to 6 m*	cum	1141.843	69.81	79,712.06
12.2	***12.8***	**1500,1700 &2100**	**Plain/Reinforced cement concrete** in open foundation complete as per drawing and technical specifications including steel shuttering forrmwork				
	A.		**Without plasticiser**				
			PCC Grade M15	cum	726.677	6,979.01	5,071,489.40
	(g)		**RCC Grade M30 (Pile Cap)**				
	Case II		***Using Batching Plant, Transit Mixer and Concrete Pump***	cum	5235.400	8,909.41	46,644,325.11
12.3	***12.22***	**1200 & 1900**	**Providing steel liner 10 mm thick f**or curbs and 6mm thick for steining of wells including fabricating and setting out as per detailed drawing	tonne	0.000	97,296.63	0.00
12.4	***12.25A***	**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	7952.000	16,804.55	133,629,781.60
12.5	***12.4 0 (a). (i)***	**1600**	**Reinforcement in foundation :Supplying, fitting and placing un-coatedTMT bar reinforcement in foundation complete as per drawing and technical specifications**				
			From primary source**s:** TATA/SAIL/Esser Steel/Jindal steel/Shyam steel				
			TMT Corrosion Resistance Steel (CRS) reinforcement bar of Fe-500 N/mm2	tonne	1502.378	64,846.06	97,423,293.93
TOTAL FOR B.1 :: FOUNDATION							**283,717,555.75**