PUBLIC WORKS DEPARTMENT
ARUNACHAL PRADESH

2021
ANALYSIS OF RATES

FOR
ROAD AND BRIDGE WORKS

ZERO LEAD BASED
(EXCLUDING CARRIAGE COST)

PUBLISHED UNDER THE AUTHORITY OF
THE CHIEF ENGINEER (CSQ)
PWD, ARUNACHAL PRADESH, ITANGAR

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सत्यमेव जयते

CHIEF MINISTER
ARUNACHAL PRADESH

Message

I am glad to know that Arunachal Pradesh Schedule of Rates – 2021 and Arunachal Pradesh Analysis of Rates -2021 for Road and Bridges is being brought out by Public Works Department, Arunachal Pradesh.

This schedule of rates is needed for realistic preparation of projects as well as their effective implementation on site for road development and bridge infrastructure in the state.

I convey my best wishes to the Engineers of Public Works Department, Arunachal Pradesh for proper and effective use of the Arunachal Pradesh Schedule of Rates 2021 and Arunachal Pradesh Analysis of Rates 2021 for Road and Bridge Works.

My best wishes to the Engineers of Public Works Department, Arunachal Pradesh.

(**Pema Khandu**)

KALING TAYENG, IAS
Commissioner

GOVERNMENT OF ARUNACHAL PRADESH
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Date : May 6, 2021

MESSAGE

The Public Works Department, Arunachal Pradesh is bringing out the Schedule of Rates-2021 and Analysis of Rates-2021 for Road and Bridge works. The Schedule of Rates once brought out will be very useful for preparation of realistic project estimates at the prevailing price level in the market to be adopted in the various regions of the State.

The Public Works Department under Government of Arunachal Pradesh is one of the premier organisations undertaking construction of roads and bridges in the State. The revision of schedule of rates plays an important role in preparation of estimate, design and scheduling of projects.

I commend all officers and staff who have been part of preparation of Arunachal Pradesh Schedule of Rates-2021 and Arunachal Pradesh Analysis of Rates-2021 for Road and Bridge works.

[Kaling Tayeng]

FOREWORD

The Arunachal Pradesh Schedule of Rates and Analysis of Rates for Road and Bridge works was last published in the year 2018. The Schedule of Rates and Analysis of Rates provide a basic framework to evaluate cost estimate of the projects. The Arunachal Pradesh Schedule of Rates (APSR 2021) and Analysis of Rates (APAR 2021) for Road and Bridge works is brought out after updating the basic rates of labour and materials to present market rates.

The important establishments in the state where major construction activities take place are scattered in the different locations with varying distance from the foothills. Hence, in order to evolve common rates for the major construction activities for the purpose of the publication of the Schedule of Rates 2021 for Road and Bridge works, the rates of major construction materials like Cement, Steel and Bitumen are updated based on the rates in nearest authorized dealers located in foothill in Assam and in Arunachal Pradesh. In the process of project evaluation based on this Schedule of Rates, the additional cost involved in carriage of materials from approved sources to site of work shall be added to arrive at the actual execution cost. Further the schedule of Rates shall not be directly adopted for payment to contractor for the work done by them at any site.

Basic structure and methodology of items are as per the standard Data Book of the **Ministry of Road Transport and Highways, Govt. of India, New Delhi.** Therefore the executions of items in this schedule at site are to be done in concurrence with the **MoRTH & MoRD Specifications** for Road and Bridge Works.

It is emphasized that while adopting the APSR-2021, the user shall acquaint themselves with the General notes for Road & Bridge for multifarious cost assumptions considered like CP & OH in the analysis and all preambles before every chapter and related **MoRTH & MoRD Specifications** precisely for accomplishing itemized tasks.

Apart from state PWD, this Schedule of Rates is being used as a guide by a number of departments, public sector undertakings, private builders etc. The state PWD will welcome comments on this Schedule of Rates and Analysis of Rates from the users for improvement in future publications.

I would like to express my appreciation for the sincere effort and dedication put in by all officers and staff in bringing out the Schedule of Rates 2021 and Analysis of Rates 2021 (Road and Bridge works) with the spirit of teamwork.

E-mail: cecsqpwd@gmail.com

6/5/2021

(Kuru Sera)
Chief Engineer (CSQ)
PWD, AP, Itanagar.

PREFACE

1 APSR 2018 and APAR 2018 of Road and bridge works is updated to APSR 2021 and APAR 2021. Carriage charge has to be accounted separately as per actual rate given.

2 The rates for completed item at the site of work shall be inclusive of basic rate of material plus the actual carriage cost of materials from source / approved quarry to the site of work. The carriage cost of each category of material can be worked out with the carriage charge attached with this SOR prepared for both plain and hill road parameters based on status of road in hilly Himalayan region of Arunachal Pradesh.

3 The basic material incorporated in this APSR - 2021 are conforming to IRC standard / MoRTHS specifications. The scheduled rate (Roads and Bridges) 2021 in now brought out purely for calculating cost of the projects by detailed estimation.

4 GST 12%, Overhead Charges 10% for Road, Overhead Charges 20% for Bridges, Contractor's profit 10% and Labour Cess 1% has been adopted in the rate of APAR and APSR 2021 (Road and Bridge Works).

5 A GST of 12% has been adopted in the rate analysis of APSR and APAR 2021 (Roads and Bridges)

6 There has been an addition of 14 new items in this SOR under Bases & Surface courses (Bituminous), Traffic Signs, Markings & other Road Appurtenances and Maintenance of Roads.

7 It is mandatory as per CPWD manual that the scheduled rate is updated after every 2 (two) years. Hence, this scheduled rate will be due to revised or updated by 2023.

8 I express my sincere thanks to all office staff members and officers of CSQ, PWD for contributing their time compiling this schedule. Special thanks go to Shri P.S Bhattacharjee, Sr. Estimator (CSQ) and Miss Mary Talom, ASW (CSQ) for their special attention on the job.

9 Due care has been made to bring APSR 2021 / APAR 2021 without error; still if such errors are noticed; same could be intimated to SE (CSQ) for necessary correction in the next edition.

Rimmar Taso
Superintending Engineer (CSQ)
PWD, AP, Itanagar.

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(A) Usage Rates of Plant and Machinery						
Code	**Description of Machine**	**Activity**	**Output of Machine**	**Output**	**Unit**	**Rate**
P&M-001	Air Compressor	General Purpose	capacity in cfm	170/250	hour	575.22
P&M-002	Batching and Mixing Plant (a) 30 cum capacity	Concrete Mixing	cum/hour	20	hour	2,787.61
P&M-003	Batching and Mixing Plant (b) 15 - 20 cum capacity	Concrete Mixing	cum/hour	13	hour	2,787.61
P&M-004	Bitumen Pressure Distributor	Applying bitumen tack coat	sqm/hour	1750	hour	1,308.85
P&M-005	Bitumen Boiler oil fired	Bitumen Spraying	capacity in litre	1500	hour	241.59
P&M-006	Concrete Paver Finisher with 40 HP Motor	Paving of concrete surface	cum / hour	20	hour	3,259.29
P&M-007	Concrete Pump of 45 & 30 cum capacity	Pumping of concrete	cum / hour	33 / 22	hour	2,576.11
P&M-008	Concrete Bucket	For Pouring concrete	capacity in cum	1	hour	18.58
P&M-009	Concrete Mixer (a) 0.4/0.28 cum	Concrete Mixing	cum/hour	2.5	hour	269.91
P&M-010	Concrete Mixer (b) 1 cum	Concrete Mixing	cum/hour	7.5	hour	269.91
P&M-011	Crane (a) 80 tonnes	Lifting Purpose			hour	1,558.41
P&M-012	Cranes b) 35 tonnes	Lifting Purpose			hour	1,038.94
P&M-013	Cranes c) 3 tonnes	Lifting Purpose			hour	433.63
P&M-014	Dozer D - 80 - A 12	Spreading /Cutting / Clearing	cum/hour	300/ 150/250	hour	4,237.17
P&M-015	Dozer D - 50 - A 15	Spreading /Cutting / Clearing	cum/hour	200/ 120/150	hour	2,934.51
P&M-016	Emulsion Pressure Distributor	Applying emulsion tack coat	sqm/hour	1750	hour	973.45
P&M-017	Front End loader 1 cum bucket capacity	Soil loading / Aggregate loading	cum/hour	60 /25	hour	1,398.23
P&M-018	Generator (a) 125 KVA	Genration of electric Energy	KVA	100	hour	1,003.54
P&M-019	Generator(b) 63 KVA	Genration of electric Energy	KVA	50	hour	780.53

Code	Description of Machine	Activity	Output of Machine	Output	Unit	Rate
P&M-020	GSB Plant 50 cum	Producing GSB	cum/hour	40	hour	1,338.05
P&M-021	Hotmix Plant - 120 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	40	hour	28,522.12
P&M-022	Hotmix Plant - 100 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	30	hour	21,092.92
P&M-023	Hotmix Plant - 60 to 90 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	25	hour	16,867.26
P&M-024	Hotmix Plant - 40 to 60 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	17	hour	13,505.31
P&M-025	Hydraulic Chip Spreader	Surface Dressing	sqm/hour	1500	hour	3,211.50
P&M-026	Hydraulic Excavator of 1 cum bucket	Soil Ordinary/Soil Marshy / Soil Unsuitable	cum/hour	60 /60 /60	hour	1,751.33
P&M-027	Integrated Stone Crusher 100THP	Crushing of Spalls	TPH	100	hour	10,559.29
P&M-028	Integrated Stone Crusher 200 HP	Crushing of Spalls	TPH	200	hour	22,212.39
P&M-029	Kerb Casting Machine	Kerb Making	Rm/hour	80	hour	377.88
P&M-030	Mastic Cooker	Mastic Wearing coat	capacity in tonne	1	hour	104.42
P&M-031	Mechanical Broom Hydraulic	Surface Cleaning	sqm/hour	1250	hour	433.63
P&M-032	Motor Grader 3.35 mtr blade	Clearing /Spreading /GSB /WBM	cum/hour	200/200/50/ 50	hour	2,917.70
P&M-033	Mobile slurry seal equipment	Mixing and laying slurry seal	sqm/hour	2700	hour	1,227.43
P&M-034	Paver Finisher Hydrostatic with sensor control 100 TPH	Paving of DBM/ BM/SDC/ Premix	cum/hour	40	hour	3,259.29
P&M-035	Paver Finisher Mechanical 100 TPH	Paving of WMM /Paving of DLC	cum/hour	40/30	hour	1,187.61
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	6,659.29
P&M-037	Pneumatic Road Roller	Rolling of Asphalt Surface	cum/hour	25	hour	1,515.04
P&M-038	Pneumatic Sinking Plant	Pneumatic Sinking of v	cum/hour	1.5 to 2.00	hour	5,081.42

Code	Description of Machine	Activity	Output of Machine	Output	Unit	Rate
P&M-039	Pot Hole Repair Machine	Repair of potholes	cum/hour	4	hour	1,105.31
P&M-040	Prestressing Jack with Pump & access	Stressing of steel wires/stands			hour	157.52
P&M-041	Ripper	Scarifying	cum/hour	60	hour	76.99
P&M-042	Rotavator	Scarifying	cum/hour	25	hour	48.67
P&M-043	Road marking machine	Road marking	Sqm/hour	100	hour	112.39
P&M-044	Smooth Wheeled Roller 8 tonne	Soil Compaction /BM Compaction	cum/hour	70/25	hour	561.95
P&M-045	Tandem Road Roller	Rolling of Aspalt Surface	cum/hour	30	hour	1,393.81
P&M-046	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	km	64.60
P&M-047	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	tonne.km	9.29
P&M-048	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	hour	779.65
P&M-049	Transit Mixer 4.0/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	hour	1,132.74
P&M-050	Transit Mixer 4/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	tonne.km	18.94
P&M-051	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	hour	1,039.20
P&M-052	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	tonne.km	23.14
P&M-053	Tractor	Pulling	capacity in HP	50	hour	476.11
P&M-054	Tractor with Rotevator	Rate of Tractor + Rotevator			hour	407.96
P&M-055	Tractor with Ripper	Rate of Tractor 6+ Ripper			hour	420.35
P&M-056	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	km	53.27
P&M-057	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	hour	641.59

Code	Description of Machine	Activity	Output of Machine	Output	Unit	Rate
P&M-058	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	tonne.km	7.65
P&M-059	Three wheel 80-100 kN Statis Roller	Earth or soil / GSB / W	cum/hour	100/60/60	hour	733.63
P&M-060	Water Tanker	Water Transport	capacity in KL	6	hour	544.25
P&M-061	Water Tanker	Water Transport	capacity in KL	6	km	26.55
P&M-062	Wet Mix Plant 60 TPH	Wet Mix	cum/hour	25	hour	1,468.14
P&M-062 (A)	Vibratory roller 8 to 10 tonne	Intermediate rolling.	cum/hour	3.9	hour	600.00

Code	Description of Machine	Unit	Rate
P&M-063	Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	634.51
P&M-064	Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	20,912.39
P&M-065	Belt conveyor system	hour	2,023.89
P&M-066	Boat to carry atleast 20 persons	hour	2,023.89
P&M-067	Cement concrete batch mix plant @ 20 cum per hour (effective output)	hour	3,534.51
P&M-068	Cement concrete batch mix plant @ 75 cum per hour	hour	4,722.12
P&M-069	Cold milling machine @ 20 cum per hour	hour	input
P&M-070	Crane 5 tonne capacity	hour	742.48
P&M-071	Crane 10 tonne capacity	hour	769.03
P&M-072	Crane 15 tonne capacity	hour	809.73
P&M-073	Crane 20 tonne capacity	hour	1,296.46
P&M-074	Crane 40 T capacity	hour	1,296.46
P&M-075	Crane with grab 0.75 cum capacity	hour	976.11
P&M-076	Compressor with guniting equipment along with accessories	hour	809.73
P&M-077	Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	404.42
P&M-078	Epoxy Injection gun	hour	3,373.45
P&M-079	Generator 33 KVA	hour	453.98
P&M-080	Generator 100 KVA	hour	849.56
P&M-081	Generator 250 KVA	hour	1,012.39
P&M-082	Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	input

Code	Description of Machine	Unit	Rate
P&M-083	Joint Cutting Machine with 2-3 blades (for rigid pavement)	hour	125.66
P&M-084	Jack for Lifting 40 tonne lifting capacity.	day	input
P&M-085	Piling rig Including double acting pile driving hammer (Hydraulic rig)	hrs	6,659.29
P&M-086	Plate compactor	hour	338.05
P&M-087	Snow blower equipment 140 HP @ 600 cum per hour	hour	input
P&M-088	Texturing machine (for rigid pavement)	hour	269.91
P&M-089	Truck Trailor 30 tonne capacity	hour	input
P&M-090	Truck Trailor 30 tonne capacity	t.km	input
P&M-091	Tunnel Boring machine	hour	input
P&M-092	Vibrating Pile driving hammer complete with power unit and accessories.	hour	input
P&M-093	Wet Mix Plant 100 TPH	hour	2,023.89
P&M-094	Wet Mix Plant 75 TPH	hour	1,619.47
P&M-095	Hot mix Plant -120 TPH capacity	hour	15,000.00
P&M-096	Hot mix Plant -100 TPH capacity	hour	13,000.00
P&M-097	Drum Type HMP of 60-90 TPH capacity @ 75 tonne per hour actual output	hour	12,000.00

	(B) Labour		
Code	**Description of Labour**	**Unit**	**Rate**
L-01	Blacksmith (IInd class)	day	354.00
L-02	Blacksmith (Ist class)/ Welder/ Plumber/ Electrician	day	442.00
L-03	Blaster (Stone cutter)	day	354.00
L-04	Carpenter I Class	day	442.00
L-05	Chiseller (Head Mazdoor)	day	354.00
L-06	Driller (Jumper)	day	354.00
L-07	Diver	day	796.00
L-08	Fitter	day	442.00
L-09	Mali	day	354.00
L-10	Mason (IInd class)	day	354.00
L-11	Mason (Ist class)	day	442.00
L-12	Mate / Supervisor	day	354.00
L-13	Mazdoor	day	310.00
L-14	Mazdoor/Dresser (Semi Skilled)	day	354.00
L-15	Mazdoor/Dresser/Sinker (Skilled)	day	442.00
L-16	Medical Officer	day	1,327.00
L-17	Operator(grouting)	day	442.00
L-18	Painter I class	day	442.00
L-19	Para medical personnel	day	796.00
L-20	Beldar	day	310.00
L-21	Coolie	day	310.00
L-21	Bhisti	day	310.00

	(C) Materials		
Code	**Description**	**Unit**	**Rate**
M-001	Stone Boulder of size 150 mm and below at Cruser Plant	cum	577.88
M-002	Supply of quarried stone 150 - 200 mm size for Hand Broken at site	cum	546.02
M-003	Boulder with minimum size of 300 mm for Pitching at Site	cum	484.96
M-004	Coarse sand at Mixing Plant	cum	601.77
M-005	Coarse sand at Site	cum	601.77
M-006	Fine sand at Site	cum	601.77
M-007	Moorum at Site	cum	278.76
M-008	Gravel/Quarry spall at Site	Cum	446.02
M-009	Granular Material or hard murrum for GSB works at Site	Cum	434.51
M-010	Granular Material or hard murrum for GSB works at Mixing Plant	Cum	278.76
M-011	Fly ash conforming to IS: 3812 (Part II & I) atHMP Plant / Batching Plant / Crushing Plant	Cum	input
M-012	Filter media/Filter Material as per Table 300-3 (MoRT&H Specification)	Cum	1,283.19

Code	Description	Unit	Rate at Plant (HMP/Batching)	Rate at Site
M-013	Close graded Granular sub-base Material 53 mm to 9.5 mm	cum	892.04	892.04
M-014	Close graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	947.79	947.79
M-015	Close graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	724.78	724.78
M-016	Close graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	780.53	780.53
M-017	Close graded Granular sub-base Material 9.5 mm to 2.36 mm	cum	757.52	757.52
M-018	Close graded Granular sub-base Material 4.75mm to 2.36 mm	cum	669.03	669.03
M-019	Close graded Granular sub-base Material 4.75mm to 75 micron mm		646.02	646.02
M-020	Close graded Granular sub-base Material 2.36 mm	cum	601.77	601.77
M-021	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve.	cum	624.78	624.78
M-022	Coarse graded Granular sub-base Material 2.36 mm & below	cum	624.78	624.78
M-023	Coarse graded Granular sub-base Material 4.75mm to 75 micron mm		669.03	669.03
M-024	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm	cum	669.03	669.03
M-025	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	724.78	724.78
M-026	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm	cum	780.53	780.53
M-027	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	836.28	836.28
M-028	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	892.04	892.04
M-029	Coarse graded Granular sub-base Material 53 mm to 26 .5mm	cum	947.79	947.79

Code	Description	Unit	Rate at Plant (HMP/Batching)	Rate at Site
M-030	Aggregates below 5.6 mm	cum	1,828.32	1,828.32
M-031	Aggregates 22.4 mm to 2.36 mm	cum	976.11	976.11
M-032	Aggregates 22.4 mm to 5.6 mm	cum	1,522.12	1,522.12
M-033	Aggregates 45 mm to 2.8 mm	cum	713.27	713.27
M-034	Aggregates 45 mm to 22.4 mm	cum	947.79	947.79
M-035	Aggregates 53 mm to 2.8 mm	cum	780.53	780.53
M-036	Aggregates 53 mm to 22.4 mm	cum	921.24	921.24
M-037	Aggregates 63 mm to 2.8 mm	cum	753.10	753.10
M-038	Aggregates 63 mm to 45 mm	cum	896.46	896.46
M-039	Aggregates 90 mm to 45 mm	cum	871.68	871.68
M-040	Aggregates 10 mm to 5 mm	cum	1,951.33	1,951.33
M-041	Aggregates 11.2 mm to 0.09 mm	cum	1,059.29	1,059.29
M-042	Aggregates 13.2 mm to 0.09 mm	cum	908.85	908.85
M-043	Aggregates 13.2 mm to 5.6 mm	cum	1,672.57	1,672.57
M-044	Aggregates 13.2 mm to 10 mm	cum	1,492.04	1,492.04
M-045	Aggregates 20 mm to 10 mm	cum	1,561.06	1,561.06
M-046	Aggregates 25 mm to 10 mm	cum	1,505.31	1,505.31
M-047	Aggregates 19 mm to 6 mm	cum	1,624.78	1,624.78
M-048	Aggregates 37.5 mm to 19 mm	cum	1,059.29	1,059.29
M-049	Aggregates 37.5 mm to 25 mm	cum	947.79	947.79
M-050	Aggregates 6 mm nominal size	cum	1,939.82	1,939.82
M-051	Aggregates 10 mm nominal size	cum	1,951.33	1,951.33
M-052	Aggregates 13.2/12.5 mm nominal size	cum	1,895.58	1,895.58
M-053	Aggregates 20 mm nominal size	cum	1,784.07	1,784.07
M-054	Aggregates 25 mm nominal size	cum	1,728.32	1,728.32
M-055	Aggregates 40 mm nominal size	cum	1,393.81	1,393.81

Code	Description	Unit	Rate
M-056	AC pipe 100 mm dia	metre	34.51
M-057	Acrylic polymer bonding coat	litre	278.76
M-058	Alluminium Paint	litre	338.05
M-059	Aluminium alloy plate 2mm Thick	sqm	input
M-060	Aluminium alloy/galvanised steel	tonne	60,135.40
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	sqm	161.95
M-062	Aluminium studs 100 x 100 mm fitted with lense reflectors	nos	539.82
M-063	G. I Barbed wire	kg	100.00
M-064	Bearing (Cost of parts)	nos	input
M-065	Bearing (Cast steel rocker bearing assembly of 250 tonne)	nos	3,37,300.88
M-066	Bearing (Elastomeric bearing assembly consisting of 7 internal layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation,)	nos	16,190.27
M-067	Bearing (Forged steel roller bearing of 250 tonne	nos	2,96,823.01
M-068	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	nos	67,433.63
M-069	Bearing (PTFE sliding plate bearing assembly of 80 tonnes)	nos	2,02,389.38
M-070	Bearing (Supply of sliding plate bearing of 80 tonne)	nos	16,190.27
M-071	Bentonite	kg	3.45
M-072	Binding wire	kg	89.38
M-073	Bitumen (Cationic Emulsion)	tonne	47,120.35
M-074	Bitumen (60-70 grade)	tonne	58,389.38
M-075	Bitumen (80-100 grade)	tonne	57,350.44
M-076	Bitumen (Cutback)	tonne	60,330.97
M-077	Bitumen (emulsion)	tonne	47,120.35

Code	Description	Unit	Rate
M-078	Bitumen (modified graded)	tonne	52,465.49
M-078 (A)	Bitumen grade PMB - 40	tonne	32,200.00
M-078 (B)	Modified Bitumen Refinary produced CRMB - 60	tonne	30,536.00
M-079	Brick	each	9.73
M-080	C.I.shoes for the pile	kg	61.06
M-081	Cement	tonne	9,053.98
M-082	Cold twisted bars (HYSD Bars)	tonne	59,823.01
M-083	Coller for joints 300 mm dia	nos	140.71
M-084	Compressible Fibre Board(20mm thick)	sqm	760.18
M-085	Connectors/ Staples	each	61.06
M-086	Copper Plate(12m long x 250mmwide)	kg	736.28
M-087	Corrosion resistant Structural steel	tonne	68,017.70
M-088	Corrugated sheet, 3 mm thick, "Thrie" beam section railing	kg	67.26
M-089	Credit for excavated rock found suitable for use	cum	257.52
M-090	Curing compound	liter	54.60
M-091	Delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	input
M-092	Earth Cost or compensation for earth taken from private land	cum	-
M-093	Elastomeric slab seal expansion joint assembly manufactured by using chloroprene, elastomer for elastomeric slab unit conforming to clause 915.1 of IRC: 83 (part II),	metre	11,038.94
M-094	Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	100 nos	1,103.54
M-095	Epoxy compound with accessories for preparing epoxy mortar	kg	245.13
M-096	Epoxy mortar	kg	input
M-097	Epoxy primer	kg	278.76
M-098	Epoxy resin-hardner mix for prime coat	kg	167.26
M-099	Flag of red color cloth 600 x 600 mm	each	67.26

Code	Description	Unit	Rate
M-100	Flowering Plants	each	14.16
M-101	Galvanised MS flat clamp	nos	37.17
M-102	Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	sqm	189.38
M-103	Galvanised structural steel plate 200 mm wide, 6 mm thick, 24 m long	kg	221.24
M-104	Gelatin 80%	kg	164.60
M-105	Geo grids	sqm	input
M-106	Geomembrane	sqm	input
M-107	Geonets	sqm	input
M-108	Geotextile	sqm	50.44
M-109	Geotextile filter fabric	sqm	input
M-110	GI bolt 10 mm Dia	nos	42.48
M-111	Grouting pump with agitator	hour	184.07
M-112	Grass (Doob)	kg	14.16
M-113	Grass (Fine)	kg	14.16
M-114	HDPE pipes 75mm dia	metre	46.90
M-115	HDPE pipes 90mm dia	metre	input
M-116	Hedge plants	each	8.58
M-117	Helical pipes 600mm diameter	metre	1,287.61
M-118	Hot applied thermoplastic compound	litre	199.12
M-119	HTS strand	tonne	71,139.82
M-120	Joint Sealant Compound	kg	337.17
M-121	Jute netting, open weave, 2.5 cm square opening for seeding and Mulching	sqm	14.16
M-122	LDO for steam curing	litre	44.25
M-123	M.S. Clamps	nos	61.06

Code	Description	Unit	Rate
M-124	M.S. Clamps	kg	245.13
M-125	M.S.shoes @ 35 Kg per pile of 15 m	kg	55.75
M-126	Tor Steel bars	tonne	59,823.01
M-127	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 sections protected against corrosion and installed by the manufacturer or his authorised representative	metre	2,33,044.25
M-128	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 control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative	metre	2,57,575.22
M-129	Nipples 12mm	nos	30.09
M-130	Nuts and bolts	kg	111.50
M-131	Paint	litre	323.01
M-132	Pavement Marking Paint	litre	267.26
M-133	Paving Fabric	sqm	input
M-134	Perforated geosynthetic pipe 150 mm dia	metre	input
M-135	Perforated pipe of cement concrete, internal dia 100 mm	metre	94.69
M-136	Pesticide	kg	343.36
M-137	Pipes 200 mm dia, 2.5 m long for drainage	metre	input
M-138	Plastic sheath, 1.25 mm thick for dowel bars	sqm	0.97
M-139	Plastic tubes 50 cm dia, 1.2 m high	nos	input
M-140	Polymer braids	metre	input
M-141	Pre moulded Joint filler,25 mm thick for expansion joint.	sqm	613.27
M-142	Pre-coated stone chips of 13.2 mm nominal size	cum	2,007.08
M-143	Preformed continuous chloroprene elastomer or closed cell foam sealing element with high tear strength, vulcanised in a single operation for the full length of a joint to ensure water tightness.	metre	4,906.19
M-144	Pre-moulded asphalt filler board	sqm	67.26

Code	Description	Unit	Rate
M-145	Pre-packed cement based polymer concrete of strength 45 Mpa at 28 days	kg	37.17
M-146	Primer	kg	189.38
M-147	Quick setting compound	kg	55.75
M-148	Random Rubble Stone	cum	576.11
M-149	RCC Pipe NP 2 heavy duty non presure pipe 1000 mm dia	metre	1,772.57
M-150	RCC Pipe NP 2 heavy duty non presure pipe 1200 mm dia	metre	2,146.90
M-151	RCC Pipe NP 2 heavy duty non presure pipe 300 mm dia	metre	471.68
M-152	Reflectorising glass beads	kg	231.86
M-154	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Galvanised carbon steel strips)	metre	input
M-155	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Glass reinforced polymer/fibre reinforced polymer/ polymeric strips)	metre	input
M-156	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Stainless steel strips)	metre	input
M-157	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. Aluminium strips)	metre	362.83
M-158	Rivets	each	0.97
M-159	Sand bags (Cost of sand and Empty cement bag)	nos	9.82
M-160	Sapling 2 m high 25 mm dia	each	98.23
M-161	Scrap tyres of size 900 x 20	nos	134.51
M-162	Seeds	kg	337.17
M-163	Selected earth	cum	201.77
M-164	Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	30.09
M-165	Sheathing duct	metre	110.62
M-166	Shrubs	each	12.39
M-167	Sludge / Farm yard manure @ 0.18 cum per 100 sqm at site of work for turfing	cum	134.51
M-168	Sodium vapour lamp	each	2,023.89
M-169	Square Rubble Coursed Stone	cum	576.11

Code	Description	Unit	Rate
M-170	Steel circular hollow pole of standard specification for street lighting to mount light at 5 m height above deck level	each	6,132.74
M-171	Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	10,119.47
M-172	Steel drum 300 mm dia 1.2 m high/empty bitumen drum	nos	67.26
M-173	Steel helmet and cushion block on top of pile head during driving.	kg	201.77
M-174	Steel pipe 25 mm external dia as per IS:1239	metre	125.66
M-175	Steel pipe 50 mm external dia as per IS:1239	metre	429.20
M-176	Steel wire rope 20 mm	kg	273.45
M-177	Steel wire rope 40 mm	kg	246.02
M-178	Strip seal expansion join	metre	13,492.04
M-179	Structural Steel	tonne	48,312.00
M-180	Super plastisizer admixture IS marked as per 9103-1999	kg	61.06
M-181	Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	input
M-182	Through and bond stone	each	14.16
M-183	Tie rods 20mm diameter	nos	275.22
M-184	Tiles size 300 x 300 mm and 25 mm thick	each	input
M-185	Timber	cum	27,318.58
M-186	Traffic cones with 150 mm reflective sleeve	nos	1,471.68
M-187	Tube anchorage set complete with bearing plate, permanent wedges etc	nos	4,661.06
M-188	Unstaked lime	tonne	12,878.76
M-189	Water	KL	67.26
M-190	Water based cement paint	litre	85.84
M-191	Welded steel wire fabric	kg	67.26
M-192	Wire mesh 50mm x 50mm size of 3mm wire	kg	161.95
M-193	Wooden ballies 2" Dia for bracing	each	42.48

Code	Description	Unit	Rate
M-194	Wooden ballies 8" Dia and 9 m long	each	552.21
M-195	Wooden packing	cum	16,168.14
M-196	Wooden staff for fastening of flag 25 mm dia, one m long	each	67.26
M-197	Coldmix Binder	tonne	63,676.99
M-198	Paving Asphalt VG-30 of approved quality	tonne	39,570.00
M-199	Waste plastic additive	tonne	40,000.00
M-200	Dry hydrated lime (factory made)	quintal	290.00
M-201	Mirror polished granite 0.5 sqm. Granite of any colour, 18 mm thick	sqm	1,600.00
M-202	Granite stone slab 30mm thick	sqm	1,800.00
M-203	Interlocking C.C. paver block, (60 mm thick, M-30)	sqm	400.00
M-204	Matt finished vitrified tile 100x100 x16mm	sqm	1,000.00
M-205	Vitrified tile 300x300 x9.8mm	sqm	500.00
M-206	Tactile tile 300x300 9.8mm	sqm	1,000.00
M-207	Coloured inter locking C.C. paver Block	sqm	450.00
M-209	Sundries	LS	2.54
M-210	Hire and running charges of mech mixer	LS	2.54
	Lead from Mixing Plant to working site	Km	0
	Lead for E/W borow area to site	LS	3

Description	Percentage of Rate
GST for Road Works	12 %
Overheads for Road Works	10 %
Contractors profit for Road Works	10 %
Cess for Road Works	1%
Overheads for Bridge Works	20 %
Overheads for Bridge Works (Rehabilitation)	10 %
Contractors profit for Bridge Works	10 %

Item Nos.	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 (As per analysis directly used Items)	per cm height per letter	0.80
Item 8.8	Painting Two Coats on New Concrete Surfaces . (---D0---)	sqm	98.00
Item 8.9	Painting angle iron post two coats. (---D0---)	sqm	95.00
Item 12.6 (B)	Cement mortor 1:2 (Excluding OH & CP) (---D0---)	cum	6,919.00
Item 12.6 (A)	Cement mortor 1:3 (Excluding OH & CP) (---D0---)	cum	5,543.00
Item 12.6 (D)	Cement mortor 1:6 (Excluding OH & CP) (---D0---)	cum	3,641.00
Item 12.7 (A)	Course Rubble masonary in cement mortor 1:3 (including OH & CP) (---D0---)	cum	5,470.00
Item 12.7 B (Addl)	Random Rubble masonary in cement mortor 1:6 (including OH & CP) (---D0---)	cum	4,470.00
Item 12.8 (A)	PCC Grade M15 including OH & CP for Open Foundation by Mixer. (---D0---)	cum	7,876.00
Item 12.8 A (SA)	PCC Grade M15 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0----)	cum	5,072.00
Item 12.8 (B)	PCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	5,649.00
Item 12.8 (C) I	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	5,849.00
Item 12.8 (C) II	RCC Grade M20 including OH & CP for Open Foundation by Batching Plant. (---D0---)	cum	8,793.00
Item 12.8 (C) II (SA)	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (---D0---)	cum	5,663.00
Item 12.8 (D) I	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,150.00
Item 12.8 (D) II	PCC Grade M25 including OH & CP for Open Foundation by Batching Plant. (---D0---)	cum	9,243.00

Item Nos.	Summary of Rates calculated and used for analysis of rates of other items	Unit	Rate
Item 12.8 (D) II (SA)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (As per analysis directly used Items)	cum	5,967.00
Item 12.8 (E) I	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,356.00
Item 12.8 (E) II	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (---D0---)	cum	6,268.00
Item 12.8 (F) I	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,204.00
Item 12.8 (F) II	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (---D0----)	cum	6,016.00
Item 12.8 (G) I	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,387.00
Item 12.8 (G) II	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (---D0---)	cum	6,201.00
Item 12.8 (H) I	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,525.00
Item 12.8 (H)	RCC Grade M35 including OH & CP for Open Foundation by Batching Plant. (---D0---)	cum	6,636.00
Item 12.8 (H) II	RCC Grade M35 excluding OH & CP for Open Foundation by Batching Plant. (---D0---)	cum	9,909.00
Item 12.8 (H) II (SA)	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (---D0---)	cum	6,443.00
Item 12.11 C (i) I	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,134.00
Item 12.11 C (i) II	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (---D0---)	cum	5,945.00
Item 12.11 C (ii) I	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,412.00
Item 12.11 C (ii) II	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (---D0---)	cum	6,220.00
Item 12.11 C (iii) I	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,466.00

Item Nos.	Summary of Rates calculated and used for analysis of rates of other items	Unit	Rate
Item 12.11 C (iii) II	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (As per analysis directly used Items)	cum	6,277.00
Item 12.11 C (iv) I	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer. (---D0---)	cum	6,593.00
Item 12.11 C (iv) II	PCC Grade M35 including OH & CP for Well Foundation (Bottom Plug) by Batching Plant. (---D0---)	cum	9,996.00
Item 12.11 C (iv) III	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant. (---D0---)	cum	6,401.00
Item 12.11 F (iv) II	PCC Grade M35 including OH & CP for Well Foundation (Well Cap) by Batching Plant. (---D0---)	cum	9,750.00
Item 3.13 (A)	Excavation for Structures (Manual Means). (---D0---)	cum	355.00
Item 3.13 (B)	Excavation for Structures (Mechenical Meanse). (---D0---)	cum	60.00
Item 14.1 (A) II	RCC Grade M20 for super-structure including OH & CP by Batching Plant. (---D0---)	cum	10,045.00
Item 14.1 (B) II	RCC Grade M20 for super-structure including OH & CP by Batching Plant. (---D0----)	cum	10,998.00
Item 14.1 (E) II	RCC Grade M20 for super-structure including OH & CP by Batching Plant. (---D0---)	cum	11,689.38
Item 14.1(C)	RCC Grade M30 for super-structure including formwork and excluding OH & CP by Batching Plant. (---D0---)	cum	7,447.00
Item 14.1 (C)(Addl)	RCC Grade M30 for super-structure excluding formwork and excluding OH & CP by Batching Plant. (---D0----)	cum	6,206.00
Item 14.2 (A)	Supplying ,fitting and placing HYSD bar reinforcement in super-structure exncluding OH & CP. (---D0---)	tonne	67,488.00
Item 13.6	Supplying, fitting and placing HYSD including OH & CP for sub-structure. (---D0---)	tonne	99,099.00
Item 5.17	Fog Seal. (---D0---)	sqm	55.00
Item 5.21 Case-(I)	Crack Prevention courses. Case-I Stress Absorbing Membrane (SAM) crack width less than 6 mm. (---D0---)	sqm	96.00

Item Nos.	Summary of Rates calculated and used for analysis of rates of other items	Unit	Rate
Item 5.21 Case-(II)	Crack Prevention courses. Case-II Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm. (As per analysis directly used Items)	sqm	110.00
Item 5.21 Case-(III)	Crack Prevention courses. Case-III Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %. (---D0----)	sqm	145.00
Item 5.21 Case-(IV)	Crack Prevention courses. Case-IV Bitumen Impregnated Geotextile. (---D0----)	sqm	164.00
Item 5.15 Case-(I)	Slurry Seal Case-I 5 mm thickness. (---D0----)	sqm	90.00
Item 5.15 Case-(II)	Slurry Seal Case-II 3 mm thickness. (---D0----)	sqm	62.00
Item 5.15 Case-(III)	Slurry Seal Case III 1.5 mm thickness. (---D0----)	sqm	38.00
Item 5.9 Case-(I)	Surface Dressing Case-I 19 mm nominal chipping size. (---D0----)	sqm	141.00
Item 5.9 Case-(II)	Surface Dressing Case-II 13 mm nominal size chipping. (---D0----)	sqm	114.00

A. Roads Works

Basic Notes for Preparation of Schedule of Rates

chedule of rates for Road Works is indicated as under :

Description of items

1. The description of items is given briefly and linked with the relevant clause of the MoRT&H Specifications for Road and Bridge Works, which may be referred for detailed description, provisions and interpretation.

2. **Mechanical Means**

Due to mechanization of construction work, rate for various items have been derived using mechanical means. However, manual means have also been provided for certain cases, where areas may be inaccessible for machines or quantum of work may not be large enough to justify deployment of the machines.

3. **Overhead Charges**

3.1 **10 percent overhead charges has been considered in the schedule of rates**

(i) Site accomodation, setting up plant, access road, water supply, electricity and general site arrangements.

(ii) Office furniture, equipment and communications.

(iii) Expenditure on

a) Corporate office of contractor
b) Site Supervision
c) Documentation and "as built" drawings

(iv) Mobilisation/de-mobilisation of resources.

(v) Labour camps with minimum amenities and transportation to work sites.

(vi) Light vehicles for site supervision including administrative and managerial requirements

(vii) Laboratory equipment and quality control including field and laboratory testing

(viii) Minor T&Ps and survey instruments and setting out works, including verification of line, dimensions, trial pits and bore holes, where required

(ix) Watch and ward

(x) Traffic management during construction

(xi) Expenditure on safeguarding environment

(xii) Sundries

(xiii) Financing Expenditure

(xiv) Work Insurance/compensation

4. **Contractor Profit**

10 percent of cost of works. Contractor profit is also added on overhead charges.

5. **Basic Inputs**

Other than the Basic given in the standard data book of MoRT&H, the rate for plants & equipments, material and labour are as per the prevailing market rates from the near by authorised dealers/quarry etc. on Zero lead basis.

6. **Plants and Equipments**

6.1 A dozer is proposed for excavation where cutting and filling for the roadway is within 100 mtr. For longer leads, a combination of hydraulic excavator and tipper is proposed.

6.2 Keeping in view the job and managerial factors and the age factor of machines, the output of plant and equipment is taken approximately 70 percent of the rated capacity given by manufacture under ideal condition.

6.3 It has been assumed that a water tanker would make one trip per hour on an average. Water charges have not been included for items where the requirement is very nominal. It is assumed that the same would be covered under sundries.

6.4 Output of plant/equipment is considered for the compacted quantities.

6.5 The usage charges for machines include ownership charges, cost of repair and maintenance including replacement of tyres and running and operating charges which includes crew, fuel and lubricants.

7. **Materials**

7.1 Quantities of materials considered in the rate are approximate for the purpose of estimating and include normal wastages. Actual consumption would have to be based on mix design.

7.2 Arunachal Pradesh has typical and hard terrain having different altitude, wherein maximum construction material are brought from Assam and utilised in different station located in state. Hence, to maintain the uniformity in rates, it is decided to prepare the APSR-2021 without considering any lead on materials and aggregate. The transportation cost shall be included in the estimate as per distance from the source of procurement of material/aggregate. The following sources has been adopted in the schedule 2021.

(i) Bitumen product - Near by Authorised Dealer

(ii) All steel items/Cement :- Tezpur/Banderdewa/North Lakhimpur/Silapathar/Dibrughar /Tinsukia

(iii) Bricks :- Kiln in Assam nearest to site of work

(iv) Aggregate :- At quarry nearby site of work.

(v) Other items :- Avarage market rates fixed for all district headquarters of state.

(vi) R.C.C. Hume Pipes :- Naharlagun/Likabali or nearby source in Assam.

7.3 The alternative proposal for cost of aggregates by installing crusher is to be compared with procurement of crushed aggregates from the market and proposal found more economical is to be adopted.

7.4 The specifications of materials shall be governed by section 1000 of MoRT&H Specifications for Road and Bridge Works.

8. **Labour**

8.1 The avarage market rate has been adopted which are workable in the state

8.2 One mate has been provided for 25 labours

9. **Carriage of Materials**

9.1 The unit for vehicle for carriage has been taken as under :

a) In hours where lead is variable. The loading and unloading for such cases have been provided separately.

b) In tonne - km where lead is variable. The loading and unloading for such cases have been provided separately.

c) Zero lead has been considered for the stone aggregate in order to work out the actual rate of aggregates by adding the transportation cost up to the site of work.

d) In case of Hot Mix Plant Zero lead has been considered. The lead may be considered as per actual location of plant.

9.2 Where the quantity of material to be transported is small such as dismantled materials and the same are required to be loaded manually, provision of tractor-trolley has been made instead of tipper.

10. **General :**

10.1 The clause numbers refer to MoRT&H Specifications for Road and Bridges Works.

10.2 Assumptions made have been indicated in respective chapter in the form of notes, where required.

10.3 Sundries to cater for unforeseen contingency and miscelleneous items have been added in the overhead charges.

10.40 Arrangement for traffic during construction shall be as per Clause 112 of MoRT&H Specifications for Road and Bridge Works.

10.50 Contractor will make his own arrangements for borrowing earth. However, compensation for earth taken from private land has been included in the rate for construction of embankment with borrowed earth.

10.6 **Credit for Dismantled Material**

Credit for dismantled materials has not been included in this schedule of rates. The dismantled materials should be examined and a realistic assessment made for such materials, which can be utilised for works and to be reflected in the estimate.

10.7 The source of material and samples are required to be approved by the Engineer before start of any work.

10.8 The rates of items include cost of testing dismantled materials.

10.9 The use of surface by construction vehicles shall be governed by Clause 119 of MoRT&H Specifications.

10.10 The contractor shall arrange to provide and maintain adequate equipment for field laboratory as per Clause 121.

10.11 Quality Control of works shall be governed by Section 900 of MoRT&H Specifications.

10.12 The various activities of works shall also be documented by photographs and video cassettes as per Clauses 125 & 126 of MoRT&H Specifications.

10.13 The classification of soil shall be as per Clause 301.2 of MoRT&H Specifications.

10.14 The earth excavated from foundations has been considered to be backfilled and balance utilised locally for road work except in the case of marshy soil.

10.15 The rate for removal of unsuitable soil does not provide for replacement by suitable soil which will have to be paid separately.

10.16 Items for hilly terrain have been analysed separately.

10.17 The hire charge rates for machinery and equipment are taken from the Standard Data Book and prevailing market rate.

10.18 10 per cent extra cement has been provided for concreting under water, where required.

10.19 Grade of cement may be adopted as per mix design.

10.20 Quantities of cement in various grades of cement concrete have been taken as per IRC:21-2000 and IRC:18-2000.

10.21 The coarse and fine aggregates shall conform to IS:383.

10.22 For pricing of RCC slab culverts, the items given in respective chapters in bridge section may be reffered.

10.23 Some of major steel producing firms have evolved thermo-mechanically treated steel which has enhanced strength, better corrosion resistance, ductility, weldability and high temparature thermal resistance. Enquiries from these are made on technical specifications and use of such products considered in works based on performance in works where these have already been used.

10.24 In case, it is decided to include the following items and their maintenance in the BOQ, the scope and specifications should be worked out and defined in a detailed manner in the tender document to avoid any dispute during execution.

(i) Site office and furniture for Engineer and his staff.

(ii) Site residential accomodation for Engineer and other supervisory staff.

(iii) Providing and maintaining vehicle for the Engineer.

GENERAL
Notes - Bridge Works

The basic approach for the preparation of schedule of rates for Bridge works is indicated as under :

1. **Description of items**

   The description of items is given briefly and linked with relevant clause of MoRT&H's Specifications for Road and Bridge Works, which may be referred for detailed description, provisions and interpretation.

2. **Overhead Charges**

   The rates include over head charges considering the following elements -

2.1 **20 percent overhead charges has been considered in the schedule of rates for :-**

(i) Site accomodation, setting up plant, access road, water supply, electricity and general site arrangements.

(ii) Office furniture, equipment and communications.

(iii) Expenditure on

a) Corporate office of contractor

b) Site Supervision

c) Documentation and "as built" drawings

(iv) Mobilisation/de-mobilisation of resources.

(v) Labour camps with minimum amenities and transportation to work sites.

(vi) Light vehicles for site supervision including administrative and managerial requirements.

(vii) Laboratory equipment and quality control including field and laboratory testing.

(viii) Minor T&P and survey instruments and setting out works, including verification of line, dimensions, trial pits and bore holes, where required.

(ix) Watch and ward.

(x) Traffic management during construction.

(xi) Expenditure on safeguarding environment.

(xii) Sundries

(xiii) Financing Expenditure.

(xiv) Work Insurance/compensation.

3 **Contractor Profit**

10 percent of cost of works. Contractor profit is also added on overhead charges.

4 **Basic Inputs**

Basic inputs are only given in the standard data book. The rates for material and labour are as per the prevailing market/govt. rates.

5 **Plants and Equipments**

The usage/hire charges of machinery/equipment have been worked out based upon present cost of equipments, repairs, POL and Operational charges.

6. **Materials**

6.1 Quantities of materials considered in the rate are approximate for the purpose of estimating and include normal wastages. Actual consumption would have to be based on mix design.

6.2 Arunachal Pradesh has typical and hard terrain having varying altitude, wherein maximum construction materials are brought from Assam and utilised in different station located in state. Hence, to maintain the uniformity in rates, it is decided to prepare the APSR-2021 without considering any lead on materials and aggregate. The transportation cost shall be included in the estimate as per distance from the source of procurement of material/aggregate. The following sources has been adopted in the schedule .

(i) Bitumen product - Near by authorised Dealer.

(ii) All steel items/Cement :- Tezpur/Banderdewa/North Lakhimpur/ /Dibrughar /Tinsukia

(iii) Bricks :- Kiln in Assam nearest to site of work

(iv) Aggregate :- At quarry nearby site of work.

(v) Other items :- Avarage market rates fixed for all district headquarter of state.

(vi) R.C.C. Hume Pipes :- Naharlagun/Likabali or nearby source in Assam.

6.3 The alternative proposal for cost of aggregate by installing crusher be compared with procurement of crushed aggregates from the market and proposal found economical is to be adopted.

6.4 The specifications of materials shall be governed by section 1000 of MoRT&H Specifications for Road and Bridge Works.

7. **Labour**

7.1 The avarage market rate has been adopted which are workable in the state.

7.2 One mate has been provided for 25 labours.

8. **Carriage of Materials**

8.1 The unit for vehicle for carriage has been taken as under :

a) In hours where lead is variable, the loading and unloading for such cases have been provided separetely.

b) In tonne - km where lead is variable, the loading and unloading for such cases have been provided separately.

c) Zero lead has been considered for the stone aggregate in order to work out the actual rate of aggregates by adding the transportation cost up to the site of work.

9 **General :**

9.1 The clause numbers refer to are of MoRT&H Specifications for Road and Bridges Works.

9.2 Assumptions made have been indicated in respective chapter in the form of notes, where required.

9.3 Sundries to cater for unforeseen contingency and miscelleneous items have been added in the overhead charges.

9.4 Arrangement for traffic during construction shall be as per Clause 112 of MoRT&H Specifications for Road and Bridge Works.

9.5 Contractor will make his own arrangements for borrowing earth. However, compensation for earth taken from private land has been included in the rate for construction of embankment with borrowed earth.

9.6 **Credit for Dismantled Material**

Credit for dismantled materials has not been included in this schedule of rates. The dismantled materials should be examined and a realistic assessment made for such materials, which can be utilised for works and to be reflected in the estimate.

9.7 The source of material and samples are required to be approved by the Engineer before start of any work.

9.8 The rates of items include cost of testing dismantled materials.

9.9 The contractor shall arrange to provide and maintain adequate equipment for field laboratory as per Clause 121.

9.10 Quality Control of works shall be governed by Section 900 of MoRT&H Specifications.

9.11 The various activities of works shall also be documented by photographs and video cassettes as per Clauses 125 & 126 of MoRT&H Specifications.

9.12 The classification of soil shall be as per Clause 301.2 of MoRT&H Specifications.

9.13 The earth excavated from foundations has been considered to be backfilled and balance utilised locally for road work except in the case of marshy soil.

9.14 The rate for removal of unsuitable soil does not provide for replacement by suitable soil which will have to be paid separately.

9.15 The hire charge rates for machinery and equipment are taken from the Standard Data Book and prevailing market rate.

9.16 10 per cent extra cement has been provided for concreting under water, where required.

9.17 Grade of cement may be adopted as per mix design.

9.18 Quantities of cement in various grades of cement concrete have been taken as per IRC:21-2000 and IRC:18-2000.

9.19 The coarse and fine aggregates shall conform to IS:383.

9.20 Some of major steel producing firms have evolved thermo-mechanically treated steel which has enhanced strength, better corrosion resistance, ductility, weld ability and high temparature thermal resistance. Enquiries from these are made on technical specifications and use of such products considered in works based on performance in works where these have already been used.

9.21 In case it is decided to include the following items and their maintenance in the BOQ, the scope and specifications should be worked out and defined in a detailed manner in the tender document to avoid any dispute during execution.

(i) Site office and furniture for Engineer and his staff.

(ii) Site residential accomodation for Engineer and other supervisory staff.

(iil) Providing and maintaining vehicle for the Engineer.

10. **Guide Bund**

10.1 The item for the guide bund are excavation, embankment and protection works.

10.2 In case bridge construction works are to be done on wide and deep water channels in major rivers provision of floating barrages etc. for taking the construction materiasl and equipments inside water shall be made separately.

10.3 The item for singking of wells cover diameters from 6 to 12 mtr and Twin D Type and size 12 m x 6 m. For other shapes like rectangular or any other size, the rates of sinking may be worked out on pro-rata basis.

10.4 The lift for casting of concrete in well steining may be 2 to 2.5 m restricting the free fall of concrete to 1.5 m and concreting layer to 450 mm.

11 **Foundation**

The Corrosion resistant treated Steel Driven Pile item has to be used only after getting the proper design approved by the authorities as per the specific need at the site.

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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					
		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	779.65	257.28	P&M-048
		Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.330	1398.23	461.42	P&M-017
		b) GST @ 12 % on (a)				86.24	
		c) Overheads @ 10 % on (a+b)				80.49	
		d) Contractors profit @ 10 % on (a+b+c)				88.54	
		e) Cess @1% on (a+b+c+d)				9.74	
		Cost for 5.5 cum = (a+b+c+d+e)				983.71	
		Rate per cum = (a+b+c+d+e)/ 5.5				178.86	
					say	***179.00***	
	Note	**Unloading will be by tipping.**					
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					
1.4(I)	Case I	**Surfaced Road**					
		Speed with load : 25 km / hour.					
		Speed while Returning empty : 35 km / hour.					
		a) Machinery.					
		i) Tipper 10 tonne capacity					
		Time taken for onward haulage with load	hour	0.400	779.65	311.86	P&M-048
		Time taken for empty return trip.	hour	0.290	779.65	226.10	P&M-048
		b) GST @ 12 % on (a)				64.56	
		c) Overheads @ 10 % on (a+b)				60.25	
		d) Contractors profit @ 10 % on (a+b+c)				66.28	
		e) Cess @1% on (a+b+c+d)				7.29	
		cost for 100 t km = a+b+c+d+e				736.34	
		Rate per t.km = (a+b+c+d+e)/100				7.36	
					say	***7.40***	
1.4(II)	Case II	**Unsurfaced Gravelled 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 hanlage with load	hour	0.500	779.65	389.83	P&M-048

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Time taken for empty return trip	hour	0.330	779.65	257.28	P&M-048
		b) GST @ 12 % on (a)				77.65	
		c) Overheads @ 10 % on (a+b)				72.48	
		d) Contractors profit @ 10 % on (a+b+c)				79.72	
		e) Cess @1% on (a+b+c+d)				8.77	
		Cost for 100 t .km = a+b+c+d+e				885.73	
		Rate per t.Km = (a+b+c+d+e)/100				8.86	
					say	***8.90***	
1.4(III)	Case 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					
		I) Tipper 10 tonnes capacity					
		Time taken for onward haulage	hour	1.000	779.65	779.65	P&M-048
		Time taken for empty return trip	hour	0.670	779.65	522.37	P&M-048
		b) GST @ 12 % on (a)				156.24	
		c) Overheads @ 10 % on (a+b)				145.83	
		d) Contractors profit @ 10 % on (a+b+c)				160.41	
		e) Cess @1% on (a+b+c+d)				17.65	
		Cost for 100 t .km = a+b+c+d+e				1782.15	
		Rate per t.Km = (a+b+c+d+e)/100				17.82	
					say	***17.80***	
1.5		**Hand Broken Stone Aggregates 63 mm nominal size**					
		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	354.00	21.24	L-12
		Mazdoor	day	1.500	310.00	465.00	L-13
		b) Material					
		Supply of quarried stone 150 - 200 mm size	cum	1.100	546.02	600.62	M-002
		c) GST @ 12 % on (a+b)				130.42	
		d) Overheads @ 10% on (a+b+c)				121.73	
		e) Contractors profit @10% on (a+b+c+d)				133.90	
		f) Cess @1% on (a+b+c+d+e)				14.73	
		Rate per cum = a+b+c+d+e+f				1487.64	
					say	***1488.00***	
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 mm nominal size.					
		Unit : cum					
		Taking Output = 600 cum at crusher location.					
		a) Labour					
		Mate	day	0.760	354.00	269.04	L-12
		Mazdoor Skilled	day	2.000	354.00	708.00	L-14
		Mazdoor including breaking of any oversize boulder.	day	17.000	310.00	5270.00	L-13

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	577.88	462304.00	M-001
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	22212.39	133274.34	P&M-028
		Front end loader 1 cum bucket capacity	Hour	20.000	1398.23	27964.60	P&M-017
		Tipper 5.5 cum capacity	Hour	20.000	779.65	15593.00	P&M-048
		d) GST @ 12 % on (a+b+c)				77445.96	
		e) Overheads @ 10 % on (a+b+c+d)				72282.89	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				79511.18	
		g) Cess @1% on (a+b+c+d+e+f)				8746.23	
		Cost for 600 cum = a+b+c+d+e+f+g				883369.24	
		Rate per cum = (a+b+c+d+e+f+g)*0.95/600				**1398.67**	
					say	***1399.00***	

Note

1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.
2. 95% of above cost will be attributed to the production of 600 cum of stone chips of 13.2 mm size and balance 5% to the production of stone dust which comes out as a by-product.
3. The integrated stone crusher includes primary and secondary crushing units.

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	354.00	269.04	L-12
	Mazdoor Skilled	day	2.000	354.00	708.00	L-14
	Mazdoor including breaking of any size boulder.	day	17.000	310.00	5270.00	L-13
	b) Material					
	Stone Boulder of size 150 mm and below	cum	800.000	577.88	462304.00	M-001
	c) Machinery					
	Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	22212.39	133274.34	P&M-028
	Front end loader 1 cum bucket capacity	Hour	20.000	1398.23	27964.60	P&M-017
	Tipper 5.5 cum capacity	Hour	20.000	779.65	15593.00	P&M-048
	d) GST @ 12 % on (a+b+c)				77445.96	
	e) Overheads @ 10 % on (a+b+c+d)				72282.89	
	f) Contractors profit @ 10 % on (a+b+c+d+e)				79511.18	
	g) Cess @1% on (a+b+c+d+e+f)				8746.23	
	Cost for 670 cum = a+b+c+d+e+f+g				883369.24	
	Rate per cum = (a+b+c+d+e+f+g)*0.90/670				**1186.62**	
				say	***1187.00***	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
	Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 20 and 40 mm. 2. 90% of above cost will be attributed to the production of 670 cum of stone aggregates of 20mm size and balance 10% 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	354.00	269.04	L-12
		Mazdoor Skilled	day	2.000	354.00	708.00	L-14
		Mazdoor	day	17.000	310.00	5270.00	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	577.88	462304.00	M-001
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	22212.39	133274.34	P&M-028
		Front end loader 1 cum bucket capacity	Hour	20.000	1398.23	27964.60	P&M-017
		Tipper 5.5 cum capacity	Hour	20.000	779.65	15593.00	P&M-048
		d) GST @ 12 % on (a+b+c)				77445.96	
		e) Overheads @ 10 % on (a+b+c+d)				72282.89	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				79511.18	
		g) Cess @1% on (a+b+c+d+e+f)				8746.23	
		Cost for 750 cum = (a+b+c+d+e+f+g)x0.85				750863.85	
		Rate per cum = (a+b+c+d+e+f+g)x0.85/750				**1001.15**	
					say	***1001.00***	
	Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm. 2. 85% of above cost will be attributed to the production of 750 cum of stone aggregates of 40mm size and balance 15% 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.					
5.9	510	**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 ***Unit = sqm*** ***Taking output = 9000 sqm*** **Case -1:-19 mm nominal chipping size** **a) Labour**					
		Mate	day	0.440	354.00	155.76	L-12
		Mazdoor	day	9.000	310.00	2790.00	L-13
		Mazdoor skilled	day	2.000	442.00	884.00	L-15

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	7.200	433.63	3122.14	P&M-031
		Air compressor 250 cfm	hour	7.200	575.22	4141.58	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3211.50	19269.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	779.65	4677.90	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
		Bitumen pressure distributor	hour	6.000	1308.85	7853.10	P&M-004
		Smooth wheeled roller 8-10 tonne weight	hour	6.000	561.95	3371.70	P&M-044
		c) Material					
		Bitumen@ 1.20 kg per sqm	tonne	10.800	58389.38	630605.30	M-074
		Crushed stone chipping,19 mm nominal size @ 0.015 cum per sqm	cum	135.000	1784.07	240849.45	M-053
		d) GST @ 12 % on (a+b+c)				111133.12	
		e) Overheads @ 10 % on (a+b+c+d)				103724.24	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				114096.67	
		g) Cess @1% on (a+b+c+d+e+f)				12550.63	
		Cost for 9000 sqm= a+b+c+d+e+f+g				1267613.97	
		Rate per sqm = (a+b+c+d+e+f+g)/9000				140.85	
					say	***141.00***	
		Case - II13 mm nominal size chipping					
		a) Labour					
		Mate	day	0.440	354.00	155.76	L-12
		Mazdoor	day	9.000	310.00	2790.00	L-13
		Mazdoor skilled	day	2.000	442.00	884.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	7.200	433.63	3122.14	P&M-031
		Air compressor 250 cfm	hour	7.200	575.22	4141.58	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3211.50	19269.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	779.65	4677.90	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004
		Vibratory roller 8-10 tonne weight	hour	6.000	733.63	4401.78	P&M-059
		c) Material					
		Bitumen@ 1.00 kg per sqm	tonne	9.000	58389.38	525504.42	M-074
		Crushed stone chipping,13 mm nominal size @ 0.01 cum per sqm	cum	90.000	1895.58	170602.20	M-052
		d) GST @ 12 % on (a+b+c)				90214.95	
		e) Overheads @ 10 % on (a+b+c+d)				84200.62	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				92620.68	
		g) Cess @1% on (a+b+c+d+e+f)				10188.28	
		Cost for 9000 sqm= a+b+c+d+e+f+g				1029015.79	
		Rate per sqm = (a+b+c+d+e+f+g)/9000				114.34	
					say	***114.00***	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
	Note	1.Where the proposed aggregate fails to pass the stripping test, an approved adhesion agent may be added to the binder as per clause 510.2.4. Alternatively, chips may be pre-coated as per clause 510.2.5 2.Input for the second coat, where required, will be the same as per the Ist coat mentioned above					
5.15	516	**Slurry Seal** Providing andlaying 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					
	Case I	**5 mm thickness** ***Unit = sqm*** ***Taking output = 16000 sqm (80 cum)*** ***Taking density of 2.2 tonnes per cum, weight of mix = 264 tonnes*** weight of mix = 176 tonnes					
		a) Labour					
		Mate	day	0.240	354.00	84.96	L-12
		Mazdoor	day	6.000	310.00	1860.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	433.63	2601.78	P&M-031
		Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
		Mobile slurry seal equipment	hour	6.000	1227.43	7364.58	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment,bitumen emulsion and filler.	hour	6.000	779.65	4677.90	P&M-048
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1515.04	9090.24	P&M-037
		Water tanker6 KL capacity	hour	2.000	544.25	1088.50	P&M-060
		c) Material					
		Residual Binder @ 11 % of mix 80 x 2.2 x 0.11	tonne	19.360	47120.35	912249.98	M-077
		Fine aggregate 4.75 mm and below 87 % of total mix,80 x 2.2 x 0.87 = 153.12 tonnes. Taking density1.5,= 153.12/1.5 = 102.08 cum	cum	102.080	601.77	61428.68	M-005
		Filler @ 2 % of total mix = 80 x 2.2 x 0.02	tonne	3.520	12878.76	45333.24	M-188
		Cost of water	KL	12.000	67.26	807.12	M-189
		d) GST @ 12 % on (a+b+c)				127011.32	
		e) Overheads @ 10 % on (a+b+c+d)				105842.77	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				129128.18	
		g) Cess @1% on (a+b+c+d+e+f)				14204.10	
		Cost for 16000 sqm= a+b+c+d+e+f+g				1434614.05	
		Rate per sqm = (a+b+c+d+e+f+g)/16000				89.66	
					say	***90.00***	
	Case II	**3 mm thickness** ***Unit = sqm*** ***Taking output = 20000 sqm (60 cum)***					
		a) Labour					
		Mate	day	0.200	354.00	70.80	L-12
		Mazdoor	day	5.000	310.00	1550.00	L-13

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		b) Machinery					
		Mechanical broom	hour	6.000	433.63	2601.78	P&M-031
		Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
		Mobile slurry seal equipment	hour	6.000	1227.43	7364.58	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment,bitumen emulsion and filler	hour	6.000	779.65	4677.90	P&M-048
		Water tanker6 KL capacity	hour	2.000	544.25	1088.50	P&M-060
		c) Material					
		Residual Binder @ 13 % of mix = 60 x 2.2 x 0.13	tonne	17.160	47120.35	808585.21	M-077
		Fine aggregate 3 mm and below 85 % of total mix, 60x 2.2 x 0.85 = 112.2 tonnes. Taking density 1.5,	cum	74.800	601.77	45012.40	M-005
		Filler @ 2 % of total mix =60x 2.2 x 0.02	tonne	2.640	12878.76	33999.93	M-188
		Cost of water	KL	12.000	67.26	807.12	M-189
		d) GST @ 12 % on (a+b+c)				110111.87	
		e) Overheads @ 10 % on (a+b+c+d)				91759.89	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				111947.07	
		g) Cess @1% on (a+b+c+d+e+f)				12314.18	
		Cost for 30000 sqm= a+b+c+d+e+f+g				1243731.93	
		Rate per sqm = (a+b+c+d+e+f+g)/20000				62.19	
					say	***62.00***	
Case III		**1.5 mm thickness**					
		Unit = sqm					
		Taking output = 24000 sqm (36 cum)					
		a) Labour					
		Mate	day	0.200	354.00	70.80	L-12
		Mazdoor	day	5.000	310.00	1550.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	433.63	2601.78	P&M-031
		Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
		Mobile slurry seal equipment	hour	6.000	1227.43	7364.58	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
		Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment,bitumen emulsion and filler.	hour	6.000	779.65	4677.90	P&M-048
		Water tanker6 KL capacity	hour	2.000	544.25	1088.50	P&M-060
		c) Material					
		Residual Binder @ 16 % of mix, 36 x 2.2 x 0.16	tonne	12.670	47120.35	597014.83	M-077
		Fine aggregate 2.36 mm and below,82 % of total mix,36x 2.2 x 0.82 = 64.94 tonnes. Taking density 1.5	cum	43.300	624.78	27052.97	M-022
		Filler @ 2 % of total mix = 36x 2.2 x 0.02	tonne	1.580	12878.76	20348.44	M-188
		Cost of water	KL	12.000	67.26	807.12	M-189
		d) GST @ 12 % on (a+b+c)				80930.11	
		e) Overheads @ 10 % on (a+b+c+d)				67441.76	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				82278.95	
		g) Cess @1% on (a+b+c+d+e+f)				9050.68	

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Cost for 24000 sqm= a+b+c+d+e+f+g				914119.12	
		Rate per sqm = (a+b+c+d+e+f+g)/24000				38.09	
					say	***38.00***	
	Note	1.Tack coat, if required to be provided, before laying slurry seal may be measured and paid separately					
5.17	518	**Fog Spray**					
		Providing and applying low viscosity bitumen emulsion for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing.					
		Unit = sqm					
		Taking output = 10500 sqm					
		a) Labour					
		Mate	day	0.120	354.00	42.48	L-12
		Mazdoor	day	3.000	310.00	930.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031
		Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
		Bitumen emulsion pressure distributor @ 1750 sqm per hour	tonne	6.000	1308.85	7853.10	P&M-004
		c) Material					
		Bitumenemulsion @ 0.75 kg per sqm	tonne	7.880	47120.35	371308.36	M-077
		d) GST @ 12 % on (a+b+c)				46342.44	
		e) Overheads @ 10 % on (a+b+c+d)				38618.70	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				47114.82	
		g) Cess @1% on (a+b+c+d+e+f)				5182.63	
		Cost for 10500 sqm= a+b+c+d+e+f+g				523445.63	
		Rate per sqm = (a+b+c+d+e+f+g)/10500				49.85	
					say	***50.00***	
		1.In case it is decided by the engineer to blind the fog spray, the following may be added					
		a) Labour					
		Mate	day	0.160	354.00	56.64	L-12
		Mazdoor for precoating of grit	day	4.000	310.00	1240.00	L-13
		c) Material					
		Crushed stone grit 3 mm size @ 3.75 kg per sqm	cum	26.250	669.03	17562.04	M-024
		Bitumenemulsion for precoating grit @ 2 % of grit,39.38 x 0.02	tonne	0.790	47120.35	37225.08	M-077
						56083.76	
						5.34	
					say	***5.00***	
5.21	522	**Crack Prevention Courses**					
	Case - 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.					
		Unit = sqm					
		Taking output = 10500 sqm					
		a) Labour					
		Mate	day	0.240	354.00	84.96	L-12
		Mazdoor	day	6.000	310.00	1860.00	L-13

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031
		Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004
		Hydraulic Chip spreader	hour	6.000	3211.50	19269.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	561.95	3371.70	P&M-044
		c) Material					
		Modified binder	tonne	9.450	52465.49	495798.88	M-078
		Crushed stone aggregates 5.6 mm size	cum	105.000	1939.82	203681.10	M-050
		d) GST @ 12 % on (a+b+c)				88556.62	
		e) Overheads @ 10 % on (a+b+c+d)				82652.85	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				90918.13	
		g) Cess @1% on (a+b+c+d+e+f)				10000.99	
		Cost for 10500 sqm= a+b+c+d+e+f+g				1010100.43	
		Rate per sqm = (a+b+c+d+e+f+g)/10500				96.20	
					say	***96.00***	

Case - 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.

Unit = sqm

Taking output = 10500 sqm

		a) Labour					
		Mate	day	0.240	354.00	84.96	L-12
		Mazdoor	day	6.000	310.00	1860.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031
		Air compressor 250 cfem capacity	hour	6.000	575.22	3451.32	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004
		Hydraulic Chip spreader	hour	6.000	3211.50	19269.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	561.95	3371.70	P&M-044
		c) Material					
		Modified binder	tonne	11.550	52465.49	605976.41	M-078
		Crushed stone chipping 11.2 mm size	cum	105.000	1951.33	204889.65	M-051
		d) GST @ 12 % on (a+b+c)				101922.95	
		e) Overheads @ 10 % on (a+b+c+d)				84935.79	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				103621.67	
		g) Cess @1% on (a+b+c+d+e+f)				11398.38	
		Cost for 10500 sqm= a+b+c+d+e+f+g				1151236.71	
		Rate per sqm = (a+b+c+d+e+f+g)/10500				109.64	
					say	***110.00***	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
Case III		**Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %**					
		Providing and laying a single coatn 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.					
		Unit = sqm					
		Taking output = 10500 sqm					
		a) Labour					
		Mate	day	0.240	354.00	84.96	L-12
		Mazdoor	day	6.000	310.00	1860.00	L-13
		Mazdoor skilled	day	2.000	442.00	884.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031
		Air compressor 250 cfem capacity	hour	6.000	575.22	3451.32	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004
		Hydraulic Chip spreader	hour	6.000	3211.50	19269.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	561.95	3371.70	P&M-044
		c) Material					
		Modified binder	tonne	15.750	52465.49	826331.47	M-078
		Crushed stone aggregates 11.2 mm size	cum	126.000	1951.33	245867.58	M-051
		d) GST @ 12 % on (a+b+c)				133388.99	
		e) Overheads @ 10 % on (a+b+c+d)				124496.39	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				136946.03	
		g) Cess @1% on (a+b+c+d+e+f)				15064.06	
		Cost for 10500 sqm= a+b+c+d+e+f+g				1521470.38	
		Rate per sqm = (a+b+c+d+e+f+g)/10500				144.90	
					say	***145.00***	
Case 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					
		Unit = sqm					
		Taking output = 3500 sqm					
		a) Labour					
		Mate	day	0.560	354.00	198.24	L-12
		Mazdoor	day	12.000	310.00	3720.00	L-13
		Mazdoor skilled	day	2.000	442.00	884.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	2.800	433.63	1214.16	P&M-031
		Air compressor 250 cfem capacity	hour	2.800	575.22	1610.62	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	tonne	2.000	1308.85	2617.70	P&M-004
		Pneumatic roller	hour	2.000	1515.04	3030.08	P&M-037
		c) Material					
		Paving grade bitumen of 80 - 100 penetration @ 1.05 kg per sqm	tonne	3.680	57350.44	211049.62	M-075
		Geotextile including 10 % for overlaps	sqm	3850.000	50.44	194194.00	M-108
		d) GST @ 12 % on (a+b+c)				50222.21	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		e) Overheads @ 10 % on (a+b+c+d)				46874.06	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				51561.47	
		g) Cess @1% on (a+b+c+d+e+f)				5671.76	
		Cost for 10500 sqm= a+b+c+d+e+f+g				572847.92	
		Rate per sqm = (a+b+c+d+e+f+g)/3500				163.67	
					say	***164.00***	
	NOTE	As bitumen overlay construction shallfollow closely the fabric placement on the same day, an output of 3500 sqm only has been considered for the analysis which will cover a length of 500 m, of 7 m widecarriagway. This can be conveniently overlaid by a bitumenious course in a day					
8.3	801	**Printing new letter and figures of any shade**					
		Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade					
		ii) English and Roman					
		Hyphens and the like not to be measured and paid for					
		Detail for 100 letters of 16 cm height.					
		Unit = per cm height per letter					
		a) Labour					
		Mate	day	0.07	354.00	24.78	
		Painter Ist class	day	1.25	442.00	552.50	
		Mazdoor	day	0.50	310.00	155.00	
		b) Material					
		Paint	Litre	0.50	323.01	161.51	
		c) GST @ 12 % on (a+b)				107.25	
		d) Overheads @ 10 % on (a+b+c)				100.10	
		e) Contractors profit @ 10 % on (a+b+c+d)				110.11	
		f) Cess @1% on (a+b+c+d+e)				12.11	
		Cost for 1600 cm = a+b+c+d+e+f				1223.36	
		Rate per cm height per letter = (a+b+c+d+e+f)/1600				0.76	
					say	***0.80***	
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	0.12	354.00	42.48	
		Painter	day	2.00	442.00	884.00	
		Mazdoor	day	1.00	310.00	310.00	
		b) Material					
		Paint conforming to requirement of clause 803.3.	Litre	6.00	267.26	1603.56	
		Add for scaffolding @ 1% of labour cost where required				16.04	
		c) GST @ 12 % on (a+b)				342.73	
		d) Overheads @ 10 % on (a+b+c)				319.88	
		e) Contractors profit @ 10 % on (a+b+c+d)				351.87	
		f) Cess @1% on (a+b+c+d+e)				38.71	
		Cost for 40 sqm = a+b+c+d+e+f				3909.27	
		Rate per sqm = (a+b+c+d+e+f)/40				97.73	
					say	***98.00***	
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					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.03	354.00	10.62	
		Painter	day	0.45	442.00	198.90	
		Mazdoor	day	0.25	310.00	77.50	
		b) Material					
		Paint ready mixed approved brand.	Litre	1.25	323.01	403.76	
		Add @ 1% on cost of material for scaffolding				4.04	
		c) GST @ 12 % on (a+b)				83.38	
		d) Overheads @ 10 % on (a+b+c)				77.82	
		e) Contractors profit @ 10 % on (a+b+c+d)				85.60	
		f) Cess @1% on (a+b+c+d+e)				9.42	
		Cost for 10 sqm = a+b+c+d+e+f				951.04	
		Rate per sqm = (a+b+c+d+e+f)/10				95.10	
					say	***95.00***	
12.6	Sub-analysis (A)	**Cement mortar1:3 (1cement :3 sand)**					
		Unit = 1 cum					
		Taking output = 1 cum					
		a) Materials					
		Cement	MT	0.51	9053.98	4617.53	
		Sand	cum	1.05	601.77	631.86	
		b) Labour					
		Mate	day	0.04	354.00	14.16	
		Mazdoor	day	0.90	310.00	279.00	
		Total Material and Labour = (a+b)				5543.00	
	Sub-analysis (B)	**Cement mortar1:2 (1cement :2 sand)**					
		Unit = 1 cum					
		Taking output = 1 cum					
		a) Materials					
		Cement	MT	0.67	9053.98	6066.17	
		Sand	cum	0.93	601.77	559.65	
		b) Labour					
		Mate	day	0.04	354.00	14.16	
		Mazdoor	day	0.90	310.00	279.00	
		Total Material and Labour = (a+b)				6919.00	
	Sub-analysis (D)	**Cement mortar1:6 (1cement :6 sand)**					
		Unit = 1 cum					
		Taking output = 1 cum					
		a) Materials					
		Cement	MT	0.29	9053.98	2625.65	
		Sand	cum	1.20	601.77	722.12	
		b) Labour					
		Mate	day	0.04	354.00	14.16	
		Mazdoor	day	0.90	310.00	279.00	
		Total Material and Labour = (a+b)				3641.00	
12.7	1400	**Stone masonry work in cement mortar 1:3 in foundation complete as drawing and Technical Specification**					
		Unit = cum					
		Taking output = 5 cum					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
	(A)	**Square Rubble Coursed Rubble Masonry (first sort)**					
		a) Material					
		Stone	cum	5.50	576.11	3168.61	M-169
		Through and bond stone	each	35.00	14.16	495.60	M-182
		(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	5543.00	8314.50	Item 12.6 (A)
		b) Labour					
		Mate	day	0.66	354.00	233.64	L-12
		Mason	day	7.50	442.00	3315.00	L-11
		Mazdoor	day	9.00	310.00	2790.00	L-13
		c) GST @ 12 % on (a+b)				2198.08	
		d) Overhead charges @ 20 % on (a+b+c)				4103.09	
		e) Contractors profit @ 10 % on (a+b+c+d)				2461.85	
		f) Cess @1% on (a+b+c+d+e)				270.80	
		Cost for 5 cum = a+b+c+d+e+f				27351.17	
		Rate per cum (a+b+c+d+e+f)/5				5470.23	
					say	***5470.00***	
	1405.3	**B) Random Rubble Masonry** (coursed/uncoursed)					
		Unit = cum					
		Taking output = 5 cum					
		a) Material					
		Stone	cum	5.50	576.11	3168.61	
		Through and bond stone	Nos	35.00	14.16	495.60	
		(35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)					
		Cement mortar 1:3 (Rate as in item 12.6 A)	cum	1.55	5543.00	8591.65	
		b) Labour					
		Mate	day	0.62	354.00	219.48	
		Mason	day	6.00	442.00	2652.00	
		Mazdoor	day	9.00	310.00	2790.00	
		c) GST @ 12 % on (a+b)				2150.08	
		d) Overheads @ 20 % on (a+b+c)				4013.48	
		e) Contractors profit @ 10 % on (a+b+c+d)				2408.09	
		f) Cess @1% on (a+b+c+d+e)				264.89	
		Cost for 5 cum = a+b+c+d+e+f				26753.88	
		Rate per cum (a+b+c+d+e+f)/5				5350.78	
					say	***5351.00***	
	@	The labour already considered in cement mortar has been taken into account while proposing labour for masonry works.					
12.7 (Add)	1400	**Stone masonry work in cement mortar 1:6 in foundation complete as drawing and Technical Specification**					
		Unit = cum					
		Taking output = 5 cum					
	1405.3	**B) Random Rubble Masonry** (coursed/uncoursed)					
		Unit = cum					
		Taking output = 5 cum					
		a) Material					
		Stone	cum	5.50	576.11	3168.61	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Through and bond stone (35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)	Nos	35.00	14.16	495.60	
		Cement mortar 1:3 (Rate as in item 13.6 D)	cum	1.55	3641.00	5643.55	
		b) Labour					
		Mate	day	0.62	354.00	219.48	
		Mason	day	6.00	442.00	2652.00	
		Mazdoor	day	9.00	310.00	2790.00	
		c) GST @ 12 % on (a+b)				1796.31	
		d) Overheads @ 20 % on (a+b+c)				3353.11	
		e) Contractors profit @ 10 % on (a+b+c+d)				2011.87	
		f) Cess @1% on (a+b+c+d+e)				221.31	
		Cost for 5 cum = a+b+c+d+e+f				22351.84	
		Rate per cum (a+b+c+d+e+f)/5				4470.37	
					say	***4470.00***	
	@	The labour already considered in cement mortar has been taken into account while proposing labour for masonry works.					
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	MT	4.13	9053.98	37392.94	
		Coarse sand	cum	6.75	601.77	4061.95	
		40 mm Aggregate	cum	8.10	1393.81	11289.86	
		20 mm Aggregate	cum	4.05	1784.07	7225.48	
		10 mm Aggregate	cum	1.35	1951.33	2634.30	
		b) Labour					
		Mate	day	0.86	354.00	304.44	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 63 KVA	hour	6.00	780.53	4683.18	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***5,072.00***			
		d) Formwork @ 4% on cost of concrete i.e.cost of material, labour and machinery				3042.98	
		e) GST @ 12 % on (a+b+c+d)				9494.11	
		f) Overheads @ 20 % on (a+b+c+d+e)				17722.34	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				10633.40	
		h) Cess @1% on (a+b+c+d+e+f+g)				1169.67	
		Cost for 15 cum = a+b+c+d+e+f+g+h				118137.11	
		Rate per cum (a+b+c+d+e+f+g+h)/15				7875.81	
					say	***7876.00***	
	Note	Nedle 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					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		a) Material					
		Cement	MT	5.16	9053.98	46718.54	
		Coarse sand	cum	6.75	601.77	4061.95	
		40 mm Aggregate	cum	5.40	1393.81	7526.57	
		20 mm Aggregate	cum	5.40	1784.07	9633.98	
		10 mm Aggregate	cum	2.70	1951.33	5268.59	
		b) Labour					
		Mate	day	0.86	354.00	304.44	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***5,649.00***			
12.8	C	**RCC Grade M20**					
		Unit = cum					
	Case I	**Using concrete mixer**					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	5.21	9053.98	47171.24	
		Coarse sand	cum	6.75	601.77	4061.95	
		20 mm Aggregate	cum	8.10	1784.07	14450.97	
		10 mm Aggregate	cum	5.40	1951.33	10537.18	
		b) Labour					
		Mate	day	0.86	354.00	304.44	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***5,849.00***			
	Case II	**With Batching Plant, Transit Mixer and Conrete Pump**					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	41.66	9053.98	377188.81	
		Coarse Sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Lead beyond 1 km, L-lead in km	T-km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6	2576.11	15456.66	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***5,663.00***			
		d) Formwork @ 4% on cost of concrete i.e.cost of material, labour and machinery				27178.12	
		e) GST @ 12 % on (a+b+c+d)				84795.75	
		f) Overheads @ 20 % on (a+b+c+d+e)				158285.40	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				94971.24	
		h) Cess @1% on (a+b+c+d+e+f+g)				10446.84	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1055130.46	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				8792.75	
					say	***8793.00***	
12.8	D	**PCC Grade M25**					
		Unit = cum					
	Case I	**Using concrete Mixer**					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	5.99	9053.98	54233.34	
		Coarse sand	cum	6.75	601.77	4061.95	
		40 mm Aggregate	cum	5.40	1393.81	7526.57	
		20 mm Aggregate	cum	5.40	1784.07	9633.98	
		10 mm Aggregate	cum	2.70	1951.33	5268.59	
		b) Labour					
		Mate	day	0.86	354.00	304.44	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,150.00***			
	Case II	**With Batching Plant, Transit Mixer and Conrete Pump**					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	47.95	9053.98	434138.34	
		Coarse sand	cum	54.00	601.77	32495.58	
		40 mm Aggregate	cum	43.20	1393.81	60212.59	
		20 mm Aggregate	cum	43.20	1784.07	77071.82	
		10 mm Aggregate	cum	21.60	1951.33	42148.73	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Transit Mixer 4 cum capacity lead	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6	2576.11	15456.66	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***5,967.00***			
		d) Formwork @ 3.75% of cost of concrete i.e.cost of material, labour and machinery				26847.40	
		e) GST @ 12 % on (a+b+c+d)				89133.36	
		f) Overheads @ 20 % on (a+b+c+d+e)				166382.27	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				99829.36	
		h) Cess @1% on (a+b+c+d+e+f+g)				10981.23	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1109104.20	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				9242.54	
					say	***9243.00***	
12.8	E	**RCC Grade M25**					
		Unit = cum					
	Case I	**Using concrete Mixer**					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.05	9053.98	54776.58	
		Coarse sand	cum	6.75	601.77	4061.95	
		20 mm Aggregate	cum	8.10	1784.07	14450.97	
		10 mm Aggregate	cum	5.40	1951.33	10537.18	
		b) Labour					
		Mate	day	0.86	354.00	304.44	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,356.00***			
	Case II	**With Batching Plant, Transit Mixer and Conrete Pump**					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	48.38	9053.98	438031.55	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		Admixer	Kg	193.52	61.06	11816.33	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity 1 cum	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,268.00***			
12.8	F	**PCC Grade M30**					
		Unit = cum					
	Case I	**Using Concrete Mixer**					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.08	9053.98	55048.20	
		Coarse sand	cum	6.75	601.77	4061.95	
		40 mm Aggregate	cum	5.40	1393.81	7526.57	
		20 mm Aggregate	cum	5.40	1784.07	9633.98	
		10 mm Aggregate	cum	2.70	1951.33	5268.59	
		b) Labour					
		Mate	day	0.86	354.00	304.44	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,204.00***			
	Case II	**Using Batching Plant, Transit Mixer and Conrete Pump**					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	48.60	9053.98	440023.43	
		Coarse sand	cum	54.00	601.77	32495.58	
		40 mm Aggregate	cum	43.20	1393.81	60212.59	
		20 mm Aggregate	cum	43.20	1784.07	77071.82	
		10 mm Aggregate	cum	21.60	1951.33	42148.73	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,016.00***			
12.8	G	**RCC Grade M30**					
	Case I	**Using Concrete Mixer**					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.10	9053.98	55229.28	
		Coarse sand	cum	6.75	601.77	4061.95	
		20 mm Aggregate	cum	8.10	1784.07	14450.97	
		10 mm Aggregate	cum	5.40	1951.33	10537.18	
		b) Labour					
		Mate	day	0.86	354.00	304.44	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,387.00***			
	Case II	**Using Batching Plant, Transit Mixer and Conrete Pump**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	48.80	9053.98	441834.22	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Transit Mixer 4 cum capacity lead beyond	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,201.00***			
12.8	H	**RCC Grade M35**					
	Case I	**Using Concrete Mixer**					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.33	9053.98	57311.69	
		Coarse sand	cum	6.75	601.77	4061.95	
		20 mm Aggregate	cum	8.10	1784.07	14450.97	
		10 mm Aggregate	cum	5.40	1951.33	10537.18	
		b) Labour					
		Mate	day	0.86	354.00	304.44	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,525.00***			
	Case II	**Using Batching Plant, Transit Mixer and Conrete Pump**					
		Unit ; cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	50.64	9053.98	458493.55	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		Admixer	Kg	202.56	61.06	12368.31	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Transit Mixer 4 cum capacity lead beyond1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6,443.00***			
		d) Formwork @ 3% on cost of concrete i.e.cost of material, labour and machinery				23193.78	
		e) GST @ 12 % on (a+b+c+d)				95558.39	
		f) Overheads @ 20 % on (a+b+c+d+e)				178375.67	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				107025.40	
		h) Cess @1% on (a+b+c+d+e+f+g)				11772.79	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1189052.19	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				9908.77	
					say	***9909.00***	
		Rate per cum (a+b+c+d)/120 Excluding GST, OH,CP & Cess				***6636.00***	
	Note:	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers @ 0.4% of weight of cement may be added for achieving desired slump of concrete.					
12.11	1200, 1500 & 1700	**Plain/Reinforced cement concrete, in well foundation complete as per drawing and technical specification**					
	C	**Bottom Plug** Concrete to be placed using tremie pipe					
	Case I	**Using Concrete Mixer**					
	(i)	**PCC Grade M20**					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	5.55	9053.98	50249.59	
		Coarse sand	cum	6.75	601.77	4061.95	
		40 mm Aggregate	cum	5.40	1393.81	7526.57	
		20 mm Aggregate	cum	5.40	1784.07	9633.98	
		10 mm Aggregate	cum	2.70	1951.33	5268.59	
		Admixer	Kg	18.60	61.06	1135.72	
		b) Labour					
		Mate	day	0.90	354.00	318.60	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	433.63	2601.78	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6134.00***			
	Note	10% extra cement may be added where under water concreting is involved.					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
	Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
		Unit ; cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	44.40	9053.98	401996.71	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		Admixer	Kg	148.80	61.06	9085.73	
		b) Labour					
		Mate	day	0.88	354.00	311.52	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***5945.00***			
	(ii)	**PCC Grade M25**					
	Case I	**Using Concrete Mixer**					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	5.99	9053.98	54233.34	
		Coarse sand	cum	6.75	601.77	4061.95	
		40 mm Aggregate	cum	5.40	1393.81	7526.57	
		20 mm Aggregate	cum	5.40	1784.07	9633.98	
		10 mm Aggregate	cum	2.70	1951.33	5268.59	
		Admixer	Kg	21.60	61.06	1318.90	
		b) Labour					
		Mate	day	0.90	354.00	318.60	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	433.63	2601.78	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6412.00***			
	Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	47.88	9053.98	433504.56	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		Admixer	Kg	172.80	61.06	10551.17	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		b) Labour					
		Mate	day	0.88	354.00	311.52	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6220.00***			
	(iii)	**PCC Grade M30**					
	Case I	**Using Concrete Mixer**					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.08	9053.98	55048.20	
		Coarse sand	cum	6.75	601.77	4061.95	
		40 mm Aggregate	cum	5.40	1393.81	7526.57	
		20 mm Aggregate	cum	5.40	1784.07	9633.98	
		10 mm Aggregate	cum	2.70	1951.33	5268.59	
		Admixer	Kg	21.60	61.06	1318.90	
		b) Labour					
		Mate	day	0.90	354.00	318.60	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	433.63	2601.78	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6466.00***			
	Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	48.64	9053.98	440385.59	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		Admixer	Kg	172.80	61.06	10551.17	
		b) Labour					
		Mate	day	0.88	354.00	311.52	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6277.00***			
	(iv)	**PCC Grade M35**					
	Case I	**Using Concrete Mixer**					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.29	9053.98	56949.53	
		Coarse sand	cum	6.75	601.77	4061.95	
		40 mm Aggregate	cum	5.40	1393.81	7526.57	
		20 mm Aggregate	cum	5.40	1784.07	9633.98	
		10 mm Aggregate	cum	2.70	1951.33	5268.59	
		Admixer	Kg	21.60	61.06	1318.90	
		b) Labour					
		Mate	day	0.90	354.00	318.60	
		Mason	day	1.50	442.00	663.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	433.63	2601.78	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6593.00***			
	Case II	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	50.28	9053.98	455234.11	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		Admixer	Kg	172.80	61.06	10551.17	
		b) Labour					
		Mate	day	0.88	354.00	311.52	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader 1 cum capacity	hour	6.00	1398.23	8389.38	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		***6401.00***			
		Add 5% of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreteing with tremie pipe..				35270.18	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		d) GST @ 12 % on (a+b+c)				96400.07	
		e) Overheads @ 20 % on (a+b+c+d)				179946.80	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				107968.08	
		g) Cess @1% on (a+b+c+d+e+f)				11876.49	
		Cost for 120 cum = a+b+c+d+e+f+g				1199525.36	
		Rate per cum = (a+b+c+d+e+f+g)/120				9996.04	
					Say	***9996.00***	
	F	**Well cap**					
	iv)	**RCC Grade M35**					
	Case II	**Using Batching Plant, Transit Mixer and Conrete Pump**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	50.64	9053.98	458493.55	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader(capacity 1 cum)	hour	6.00	1398.23	8389.38	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Formwork @ 3% of (a+b+c)				22822.74	
		d) GST @ 12 % on (a+b+c)				94029.67	
		e) Overheads @ 20 % on (a+b+c+d)				175522.05	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				105313.23	
		g) Cess @1% on (a+b+c+d+e+f)				11584.46	
		Cost for 120 cum = a+b+c+d+e+f+g				1170030.00	
		Rate per cum = (a+b+c+d+e+f+g)/120				9750.25	
					Say	***9750.00***	
	Note	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers @ 0.4% of weight of cement may be added for achieving desired slump of concrete.					
3.13	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 remaning earth locally for road work.					
		I) Ordinary soil					
		Unit = cum					
		Taking output = 10 cum					
	A	**Manual Means**					
		(i) Depth upto 3 m					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.320	354.00	113.28	L-12
		Mazdoor	day	8.000	310.00	2480.00	L-13
		b) GST @ 12 % on (a)				311.19	
		c) Overheads @ 10 % on (a+b)				290.45	
		d) Contractors profit @ 10 % on (a+b+c)				319.49	
		e) Cess @1% on (a+b+c+d)				35.14	
		Cost for 10 cum = a+b+c+d+e				3549.55	
		Rate per cum = (a+b+c+d+e)/10				354.96	
					say	***355.00***	
	Note	Cost of dewatering may be added where required upto 10 % of labour cost Assessment for dewatering shall be made as per site conditions..					
	B	**Mechanical Means**					
		(i) Depth upto 3 m					
		Unit = cum					
		Taking output = 300 cum					
		a) Labour					
		Mate	day	0.32	354	113.28	
		Mazdoor	day	8.00	310	2480.00	
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capac	hour	6.00	1751	10506.00	
		c) GST @ 12 % on (a+b)				1571.91	
		d) Overheads @ 10 % on (a+b+c)				1467.12	
		e) Contractors profit @ 10 % on (a+b+c+d)				1613.83	
		f) Cess @1% on (a+b+c+d+e)				177.52	
		Cost for 300 cum = a+b+c+d+e+f				17929.66	
		Rate per cum = (a+b+c+d+e+f)/300				59.77	
					say	***60.00***	
	Note	Cost of dewatering upto 5% of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
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% overlaps and wastage	MT	1.05	59823.01	62814.16	
		Binding wire	kg	6.00	89.00	534.00	
		b) Labour for cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.34	354.00	120.36	
		Blacksmith	day	2.00	442.00	884.00	
		Mazdoor	day	6.50	310.00	2015.00	
		c) GST @ 12 % on (a+b)				7964.10	
		d) Overheads @ 20 % on (a+b+c)				14866.32	
		e) Contractors profit @ 10 % on (a+b+c+d)				8919.79	
		f) Cess @1% on (a+b+c+d+e)				981.18	
		Rate for per MT (a+b+c+d+e+f)				99098.91	
					say	***99099.00***	
14.1	1500 &1600 1700	**Furnishing and Placing Reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specification**					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
	A	**RCC Grade M20**					
	Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	40.92	9053.98	370488.86	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader	hour	6.00	1398.23	8389.38	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1132.74	16991.10	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 120 cum		**672754.00**			
	(i)	**For solid slab super-structure, 20-30% of (a+b+c)**					
	(p)	**Height upto 5m**					
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 120 cum				672754.00	
		d) Formwork and staging 20 % of (a+b+c)				134550.80	
		e) GST @ 12 % on (a+b+c+d)				96876.58	
		f) Overheads @ 20 % on (a+b+c+d+e)				180836.28	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				108501.77	
		h) Cess @1% on (a+b+c+d+e+f+g)				11935.19	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1205454.62	
		Rate per cum (a+b+c+d+e+f+g+h)/120				10045.46	
					say	***10045.00***	
	B	**RCC Grade M25**					
	Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	47.95	9053.98	434138.34	
		Coarse sand	cum	54.20	601.77	32615.93	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		b) Labour					
		Mate	day	0.84	354.00	297.36	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	18.00	310.00	5580.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader	hour	6.00	1398.23	8389.38	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1132.74	16991.10	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 120 cum		**736523.00**			
		For formwork and staging add the following:					
	(i)	**For solid slab super-structure, 20-30% of (a+b+c)**					
	(p)	**Height upto 5m**					
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 120 cum				736523.00	
		d) Formwork and staging 20 % of (a+b+c)				147304.60	
		e) GST @ 12 % on (a+b+c+d)				106059.31	
		f) Overheads @ 20 % on (a+b+c+d+e)				197977.38	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				118786.43	
		h) Cess @1% on (a+b+c+d+e+f+g)				13066.51	
		Cost for 120 cum= a+b+c+d+e+f+g+h				1319717.23	
		Rate per cum (a+b+c+d+e+f+g+h)/120				10997.64	
					say	***10998.00***	
	C	**RCC Grade M 30**					
	Case II	**Using Batching Plant, Transit Mixer and Concrete Pump.**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	48.79	9053.98	441743.68	
		Coarse sand	cum	54.60	601.77	32856.64	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		b) Labour					
		Mate	day	0.88	354.00	311.52	
		Mason	day	3.00	442.00	1326.00	
		Mazdoor	day	19.00	310.00	5890.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader	hour	6.00	1398.23	8389.38	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1132.74	16991.10	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 120 cum		**744694.00**			
		For formwork and staging add the following:					
	(i)	**For solid slab super-structure, 20-30% of (a+b+c)**					
	(p)	**Height upto 5m**					
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 120 cum				744694.00	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		d) Formwork and staging 20 % of (a+b+c)				148938.80	
		e) GST @ 12 % on (a+b+c+d)				107235.94	
		f) Overheads @ 20 % on (a+b+c+d+e)				200173.75	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				120104.25	
		h) Cess @1% on (a+b+c+d+e+f+g)				13211.47	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1334358.21	
		Rate per cum (a+b+c+d+e+f+g+h)/120				11119.65	
					say	***11120.00***	
		Rate per cum (a+b+c+d)/120 (including formwork and excluding GST, OH, CP & Cess)				***7447.00***	
		Rate per cum (a+b+c+d)/120 (excluding formwork and excluding GST, OH, CP & Cess)				***6206.00***	
E		**PSC Grade M-40**					
Case 1		**Using concret mixer.**					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.45	9053.98	58398.17	
		Coarse sand	cum	6.75	601.77	4061.95	
		20 mm Aggregate	cum	8.10	1784.07	14450.97	
		10 mm Aggregate	cum	5.40	1951.33	10537.18	
		Admixture @ 0.4% of cement	kg	25.80	61.06	1575.35	
		b) Labour					
		Mate	day	0.96	354.00	339.84	
		Mason	day	2.00	442.00	884.00	
		Mazdoor	day	22.00	310.00	6820.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	269.91	1619.46	
		Generator 33 KVA	hour	6.00	453.98	2723.88	
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 15 cum		**101411.00**			
Case II		**Using Batching Plant, Transit Mixer and Concrete Pump**					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	51.60	9053.98	467185.37	
		Coarse sand	cum	54.00	601.77	32495.58	
		20 mm Aggregate	cum	64.80	1784.07	115607.74	
		10 mm Aggregate	cum	43.20	1951.33	84297.46	
		Admixture @ 0.4% of cement	kg	206.40	61.06	12602.78	
		Admixer	Kg	216.00	61.06	13188.96	
		b) Labour					
		Mate	day	0.94	354.00	332.76	
		Mason	day	3.50	442.00	1547.00	
		Mazdoor	day	20.00	310.00	6200.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	
		Generator 100 KVA	hour	6.00	849.56	5097.36	
		Loader	hour	6.00	1398.23	8389.38	
		Transit Mixer (capacity 4.0 cu.m)					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1132.74	16991.10	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	18.94	0.00	L= 0
		Concrete Pump	hour	6.00	2576.11	15456.66	
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 120 cum		**796118.00**			
		For formwork and staging add the following:					
	(i)	**For solid slab super-structure, 18-28% of (a+b+c)**					
	(p)	**Height upto 5m**					
		Basic Cost of Labour, Material & Mechinery (a+b+c) for 120 cum				796118.00	
		d) Formwork and staging 18 % of (a+b+c)				143301.24	
		e) GST @ 12 % on (a+b+c+d)				112730.31	
		f) Overheads @ 20 % on (a+b+c+d+e)				210429.91	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				126257.95	
		h) Cess @1% on (a+b+c+d+e+f+g)				13888.37	
		Cost for 120 cum= a+b+c+d+e+f				1402725.78	
		Rate per cum (a+b+c+d+e+f)/120				11689.38	
					say	***11689.00***	
	Note	1.Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers conforming IS: 9103 @ 0.4% 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 seperately in the rate analysis.					
14.2	1600	**A) 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% for laps and wast	MT	1.05	59823.01	62814.16	
		Binding wire	Kg	8.00	89.00	712.00	
		b) Labour for cutting, bending, tying and placing in position					
		Mate	day	0.44	354.00	155.76	
		Blacksmith	day	3.00	442.00	1326.00	
		Mazdoor	day	8.00	310.00	2480.00	
		Per Cum Basic Cost of Labour, Material & Mechinery (a+b+c)		**67488.00**			
8.9	803	**Painting on Steel Surfaces with aluminium paint**					
		Providing and applying two coats of ready mix aluminium paint of approved brand on steel surface through cleaning of surface to give an even shade					
		Unit = sqm					
		Taking output = 10 sqm					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	0.03	354.00	10.62	L-12
		Painter	day	0.45	442.00	198.90	L-18
		Mazdoor	day	0.25	310.00	77.50	L-13
		b) Material					
		Paint ready mixed approved brand	Litre	1.25	180.00	225.00	
		Add @ 1% on cost of material for scaffolding				2.25	
		c) GST @ 12 % on (a+b)				61.71	
		d) Overheads @ 10 % on (a+b+c)				57.60	
		e) Contractors profit @ 10 % on (a+b+c+d)				63.36	
		f) Cess @1% on (a+b+c+d+e)				6.97	
		Cost for 10 sqm = a+b+c+d+e+f				703.91	
		Rate per sqm (a+b+c+d+e+f)/10				70.39	
					say	***70.00***	

CHAPTER - 1

CARRIAGE OF MATERIALS

Preamble:

1 The rate analysis of loading and unloading of various items include stacking.

2 The rate analysis for loading and unloading has been given both by manual and mechanical means. Means of loading/unloading appropriate to the work and site is to be adopted.

3 The rate analysis for haulage of materials has been made in terms of tonne-kilometre (t.km) for ease of adoption depending upon the lead in km and load in tonnes.

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

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

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

7 Analysis and the rates for the Carriage of materials on Hill roads has been made available for judicious application according to site locations.

CHAPTER-1
CARRIAGE OF MATERIALS

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
1.1			**Loading and Unloading of Stone Boulder/ Stoneaggregates/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					
			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) Manoeuvring, reversing, dumping and turning for return		2 Min			
			iv) Waiting time, unforeseen contingencies etc		4 Min			
			v) Extra		13 Min			
			Total		**33.000**			
			a) Machinery					
			Tipper 5.5 tonnes capacity	hour	0.330	779.65	257.28	P&M-048
			Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.330	1398.23	461.42	P&M-017
			b) GST @ 14.05 % on (a)				86.24	
			c) Overhead charges @ 10 % on (a+b)				80.49	
			d) Contractor's profit @ 10 % on (a+b+c)				88.54	
			e) Cess @ 1% on (a+b+c+d)				9.74	
			Cost for 5.5 cum = a+b+c+d+e				983.71	
			Rate per cum = (a+b+c+d+e)/ 5.5				178.86	
		Note	**Unloading will be by tipping.**			***say***	***179.00***	
1.2			**Loading and Unloading of Boulders by Manual Means**					
			Unit = cum					
			Taking output = 5.5 cum					
			a) Labour					
			Mate	day	0.110	354.00	38.94	L-12
			Mazdoor for loading and unloading	day	0.750	310.00	232.50	L-13
			b) Machinery					
			Tipper 5.5 tonne capacity	hour	0.750	779.65	584.74	P&M-048
			c) GST @ 12 % on (a+b)				102.74	
			d) Overhead charges @ 10 % on (a+b+c)				95.89	
			e) Contractor's profit @ 10 % on (a+b+c+d)				105.48	
			f) Cess @ 1 % on (a+b+c+d+e)				11.60	
			Cost for5.5 cum = a+b+c+d+e+f				1171.89	
			Rate per cum = (a+b+c+d+e+f)/5.5				213.07	
		Note	Unloading will be by tipping.			***say***	***213.00***	
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	354.00	28.32	L-12
			Mazdoor for loading and unloading	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	2.000	641.59	1283.18	P&M-057
			c) GST @ 12 % on (a+b)				231.78	
			d) Overhead charges @ 10 % on (a+b+c)				216.33	
			e) Contractor's profit @ 10 % on (a+b+c+d)				237.96	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			f) Cess @ 1 % on (a+b+c+d+e)				26.18	
			Cost for10 tonnes = a+b+c+d+e+f				2643.75	
			Rate per tonnes = (a+b+c+d+e+f)/10				264.38	
						say	***264.00***	
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	779.65	311.86	P&M-048
			Time taken for empty return trip.	hour	0.290	779.65	226.10	P&M-048
			b) GST @ 12 % on (a)				64.56	
			c) Overhead charges @ 10 % on (a+b)				60.25	
			d) Contractor's profit @ 10 % on (a+b+c)				66.28	
			e) Cess @ 1 % on (a+b+c+d)				7.29	
			cost for 100 t km = a+b+c+d+e				736.34	
			Rate per t.km = (a+b+c+d+e)/100				7.36	
						say	***7.40***	
1.4		**(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	779.65	389.83	P&M-048
			Time taken for empty return trip	hour	0.330	779.65	257.28	P&M-048
			b) GST @ 12 % on (a)				77.65	
			c) Overhead charges @ 10 % on (a+b)				72.48	
			d) Contractor's profit @ 10 % on (a+b+c)				79.72	
			e) Cess @ 1 % on (a+b+c+d)				8.77	
			Cost for 100 t .km = a+b+c+d+e				885.73	
			Rate per t.Km =(a+b+c+d+e)/100				8.86	
						say	***8.90***	
1.4		**(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	779.65	779.65	P&M-048
			Time taken for empty return trip	hour	0.670	779.65	522.37	P&M-048
			b) GST @ 12 % on (a)				156.24	
			c) Overhead charges @ 10 % on (a+b)				145.83	
			d) Contractor's profit @ 10 % on (a+b+c)				160.41	
			e) Cess @ 1 % on (a+b+c+d)				17.65	
			Cost for 100 t .km = a+b+c+d+e				1782.15	
			Rate per t.Km = (a+b+c+d+e)/100				17.82	
						say	***17.80***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			FOR HILL ROADS					
1.5			**Loading and Unloading of Stone Boulder / Stone aggregates / Sand / Kanker /Moorum / Lime / Shingle / Earth / Excavated Rock and Kerb Stone for hill roads.**					
			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 = 3.5 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		8 Min			
			iii) Manoeuvring, reversing, dumping and turning for return		2 Min			
			iv) Waiting time, unforeseen contingencies etc		4 Min			
			v) Extra		6 Min			
			Total		**21** Min			
			a) Machinery					
			Tipper 5.5 tonnes capacity	hour	0.210	779.65	163.73	P&M-048
			Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.210	1398.23	293.63	P&M-017
			b) GST @ 12 % on (a)				54.88	
			c) Overhead charges @ 10 % on (a+b)				51.22	
			d) Contractor's profit @ 10 % on (a+b+c)				56.35	
			e) Cess @ 1 % on (a+b+c+d)				6.20	
			Cost for 3.5 cum = a+b+c+d+e				626.01	
			Rate per cum = (a+b+c+d+e)/ 3.5				178.86	
	Note		Unloading will be by tipping.			***say***	***179.00***	
1.6			**Loading and Unloading of Stone Boulder / Stone aggregates / Sand / Kanker/Moorum / Lime / Shingle / Earth / Excavated Rock and Kerb Stones by Manual Means for hill roads.**					
			Unit = cum					
			Taking output = 3.5 cum					
			a) Labour					
			Mate	day	0.070	354.00	24.78	L-12
			Mazdoor for loading and unloading	day	0.480	310.00	148.80	L-13
			b) Machinery					
			Tipper 5.5 tonne capacity	hour	0.480	779.65	374.23	P&M-048
			c) GST @ 12 % on (a+b)				65.74	
			d) Overhead charges @ 10 % on				61.36	
			e) Contractor's profit @ 10 % on (a+b+c+d)				67.49	
			f) Cess @ 1 % on (a+b+c+d+e)				7.42	
			Cost for 3.5 cum = a+b+c+d+e+f				749.82	
			Rate per cum = (a+b+c+d+e+f)/3.5				214.23	
	Note		Unloading will be by tipping.			***say***	***214.00***	
1.7			**Loading and Unloading of Cement / Steel / Structural Steel / RC Pipe / Wooden Logs / Bricks / Bitumen and Timber etc, by Manual Means and Stacking for hill roads.**					
			Unit = tonne					
			Taking output = 7 tonnes					
			a) Labour					
			Mate	day	0.060	354.00	21.24	L-12
			Mazdoor for loading and unloading	day	1.400	310.00	434.00	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	1.400	641.59	898.23	P&M-057

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			c) GST @ 12 % on (a+b)				162.42	
			d) Overhead charges @ 10 % on				151.59	
			e) Contractor's profit @ 10 % on (a+b+c+d)				166.75	
			f) Cess @ 1 % on (a+b+c+d+e)				18.34	
			Cost for10 tonnes = a+b+c+d+e+f				1852.57	
			Rate per tonnes = (a+b+c+d+e+f)/7				264.65	
						say	***265.00***	
1.8			**Cost of Haulage Excluding Loading and Unloading on hill roads**					
			Haulage of materials by tipper excluding cost of loading, unloading and stacking.					
			Unit = t.km					
			Taking output 7 tonnes load and lead 10 km = 70 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	779.65	311.86	P&M-048
			Time taken for empty return trip.	hour	0.290	779.65	226.10	P&M-048
			b) GST @ 12 % on (a)				64.56	
			c) Overhead charges @ 10 % on (a+b)				60.25	
			d) Contractor's profit @ 10 % on (a+b+c)				66.28	
			e) Cess @ 1 % on (a+b+c+d)				7.29	
			cost for 100 t km = a+b+c+d+e				736.34	
			Rate per t.km = (a+b+c+d+e)/70				10.52	
						say	***10.50***	
1.8		**(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	779.65	389.83	P&M-048
			Time taken for empty return trip	hour	0.330	779.65	257.28	P&M-048
			b) GST @ 12 % on (a)				77.65	
			c) Overhead charges @ 10 % on (a+b)				72.48	
			d) Contractor's profit @ 10 % on (a+b+c)				79.72	
			e) Cess @ 1 % on (a+b+c+d)				8.77	
			Cost for 100 t .km = a+b+c+d+e				885.73	
			Rate per t.Km = (a+b+c+d+e)/70				12.65	
						say	***12.70***	
1.8		**(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	779.65	779.65	P&M-048
			Time taken for empty return trip	hour	0.670	779.65	522.37	P&M-048
			b) GST @ 12 % on (a)				156.24	
			c) Overhead charges @ 10 % on (a+b)				145.83	
			d) Contractor's profit @ 10 % on (a+b+c)				160.41	
			e) Cess @ 1 % on (a+b+c+d)				17.65	
			Cost for 100 t .km = a+b+c+d+e				1782.15	
			Rate per t.Km = (a+b+c+d+e)/70				25.46	
						say	***25.50***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
1.9			**Cost of Haulage of Bitumen Excluding Loading and Unloading on hill roads.**					
			Haulage of materials by truck excluding cost of loading, unloading and stacking.					
			Unit = t.km					
			Taking output 5 tonnes load and lead 10 km = 50 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	641.59	256.64	P&M-057
			Time taken for empty return trip.	hour	0.290	641.59	186.06	P&M-057
			b) GST @ 12 % on (a)				53.12	
			c) Overhead charges @ 10 % on (a+b)				49.58	
			d) Contractor's profit @ 10 % on (a+b+c)				54.54	
			e) Cess @ 1 % on (a+b+c+d)				6.00	
			cost for 100 t km = a+b+c+d+e				605.94	
			Rate per t.km = (a+b+c+d+e)/50				12.12	
						say	***12.10***	
		(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	641.59	320.80	P&M-057
			Time taken for empty return trip	hour	0.330	641.59	211.72	P&M-057
			b) GST @ 12 % on (a)				63.90	
			c) Overhead charges @ 10 % on (a+b)				59.64	
			d) Contractor's profit @ 10 % on (a+b+c)				65.61	
			e) Cess @ 1 % on (a+b+c+d)				7.22	
			Cost for 100 t .km = a+b+c				728.89	
			Rate per t.Km = (a+b+c)/50				14.58	
						say	***14.60***	
		(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	641.59	641.59	P&M-057
			Time taken for empty return trip	hour	0.670	641.59	429.87	P&M-057
			b) GST @ 12 % on (a)				128.58	
			c) Overhead charges @ 10 % on (a+b)				120.00	
			d) Contractor's profit @ 10 % on (a+b+c)				132.00	
			e) Cess @ 1 % on (a+b+c+d)				14.52	
			Cost for 100 t .km = a+b+c				1466.56	
			Rate per t.Km = (a+b+c)/50				29.33	
						say	***29.30***	

Chapter – 2

SITE CLEARANCE

Preamble:

1 Unless otherwise stated, the rates include sorting and disposal of unserviceable materials and stacking of serviceable materials with all lifts and upto a lead of 1000 m.

2 The rates include Tools & Plants (T&Ps) and scaffolding required for items of dismantling.

3 Carriage of dismantled materials, bushes, branches of tree, etc. has been catered with a tractor-trolley of 3 tonnes capacity with manual loading and unloading @ 2 trips per hour within a lead of 1000 m. This will be economical for such works as compared with a tipper.

4 The dismantling of structures has been catered both by manual and mechanical means. The Engineer can use his discretion depending upon quantum of work and particular site conditions.

5 Rate analysis for removing of stumps and roots has also been provided separately.

6 Dismantling of Hume pipes has been catered manually as pipes can be easily rolled by men to a suitable stacking place within the right-of-way.

7 For dismantling of structure, which remain submerged in water, the cost may be enhanced by 50 percent. If site conditions warrant lowering of water level to facilitate dismantling, the cost may be enhanced by additional 25 percent.

8 Dismantling of utilities, like, water supply lines, electric and telephone lines is required to be done under the supervision of concerned departments with prior information to the user public.

9 In certain items of dismantling, like, pipe culverts, utilities, etc. excavation in earth and dismantling of masonary works is not included in this analysis for which suitable notes have been inserted in respective Chapters. These items are required to be priced separately based on actual quantities at site and nature of work.

10 The dismantled materials should be examined and a realistic assessment and provision should be made after due process for the salvage value for such materials, which can be utilized for works or auctioned.

11 In case where lead for disposal is more than 1000 m, extra cost of carriage is required to be added based on tonne-kilometerage as per Chapter 1.

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

CHAPTER-2
SITE CLEARANCE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in 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	354.00	7.08	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	310.00	186.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	476.11	47.61	P&M-053
			c) GST @ 12 % on (a+b)				28.88	
			d) Overhead charges @ 10 % on (a+b+c)				26.96	
			e) Contractor's profit @ 10 % on (a+b+c+d)				29.65	
			f) Cess @ 1% on (a+b+c+d+e)				3.26	
			Rate for each tree = a+b+c+d+e+f				329.44	
						say	***329.00***	
2.1		(ii)	**Girth from 600 mm to 900 mm**					
			a) Labour					
			Mate	day	0.040	354.00	14.16	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	310.00	279.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.300	476.11	142.83	P&M-053
			c) GST @ 12 % on (a+b)				52.32	
			d) Overhead charges @ 10 % on (a+b+c)				48.83	
			e) Contractor's profit @ 10 % on (a+b+c+d)				53.71	
			f) Cess @ 1% on (a+b+c+d+e)				5.91	
			Rate for each tree = a+b+c+d+e+f				596.76	
						say	***597.00***	
2.1		(iii)	**Girth from 900 mm to 1800 mm**					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.400	476.11	190.44	P&M-053
			c) GST @ 12 % on (a+b)				100.65	
			d) Overhead charges @ 10 % on (a+b+c)				93.94	
			e) Contractor's profit @ 10 % on (a+b+c+d)				103.34	
			f) Cess @ 1 % on (a+b+c+d+e)				11.37	
			Rate for each tree = a+b+c+d+e+f				1148.06	
						say	***1148.00***	
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					

CHAPTER-2
SITE CLEARANCE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			a) Labour					
			Mate	day	2.000	354.00	708.00	L-12
			Mazdoor	day	50.000	310.00	15500.00	L-13
			b) GST @ 12 % on (a)				1944.96	
			c) Overhead charges @ 10 % on (a+b)				1815.30	
			d) Contractor's profit @ 10 % on (a+b+c)				1996.83	
			e) Cess @ 1% on (a+b+c+d)				219.65	
			Rate per Hectare = a+b+c+d+e				22184.74	
						say	***22185.00***	
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					
		(i)	**By Manual Means:-**					
		A	**In area of light jungle**					
			a) Labour					
			Mate	day	6.000	354.00	2124.00	L-12
			Mazdoor	day	150.000	310.00	46500.00	L-13
			b) Machinery					
			Tractor-trolley	hour	1.000	476.11	476.11	P&M-053
			c) GST @ 12 % on (a+b)				5892.01	
			d) Overhead charges @ 10 % on (a+b+c)				5499.21	
			e) Contractor's profit @ 10 % on (a+b+c+d)				6049.13	
			f) Cess @ 1 % on (a+b+c+d+e)				665.40	
			Rate for each tree = a+b+c+d+e+f				67205.86	
						say	***67206.00***	
2.3 (i)		**B**	**In area of thorny jungle**					
			a) Labour					
			Mate	day	8.000	354.00	2832.00	L-12
			Mazdoor	day	200.000	310.00	62000.00	L-13
			b) Machinery					
			Tractor-trolley	hour	2.000	476.11	952.22	P&M-053
			c) GST @ 12 % on (a+b)				7894.11	
			d) Overhead charges @ 10 % on (a+b+c)				7367.83	
			e) Contractor's profit @ 10 % on (a+b+c+d)				8104.62	
			f) Cess @ 1 % on (a+b+c+d+e)				891.51	
			Rate for each tree = a+b+c+d+e+f				90042.29	
						say	***90042.00***	
2.3		**(ii)**	**By Mechanical Means**					
		A	**In area of light jungle**					
			a) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mazdoor	day	4.000	310.00	1240.00	L-13
			b) Machinery					
			Dozer 80 HP with attachment for removal of trees & stumps	hour	10.000	4237.17	42371.70	P&M-014
			Tractor-trolley	hour	1.000	476.11	476.11	P&M-053
			c) GST @ 12 % on (a+b)				5297.33	
			d) Overhead charges @ 10 % on (a+b+c)				4944.18	
			e) Contractor's profit @ 10 % on (a+b+c+d)				5438.60	
			f) Cess @ 1 % on (a+b+c+d+e)				598.25	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Rate for each tree = a+b+c+d+e+f				60422.81	
						say	***60423.00***	
2.3 (ii)		**B**	**In area of thorny jungle**					
			a) Labour					
			Mate	day	0.240	354.00	84.96	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Dozer 80 HP with attachment for removal of trees & stumps	hour	12.000	4237.17	50846.04	P&M-014
			Tractor-trolley	hour	1.500	476.11	714.17	P&M-053
			c) GST @ 12 % on (a+b)				6420.62	
			d) Overhead charges @ 10 % on (a+b+c)				5992.58	
			e) Contractor's profit @ 10 % on (a+b+c+d)				6591.84	
			f) Cess @ 1 % on (a+b+c+d+e)				725.10	
			Rate for each tree = a+b+c+d+e+f				73235.31	
						say	***73235.00***	
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	354.00	14.16	L-12
			Mazdoor for dismantling and loading	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				54.33	
			d) Overhead charges @ 10 % on (a+b+c)				50.70	
			e) Contractor's profit @ 10 % on (a+b+c+d)				55.77	
			f) Cess @ 1 % on (a+b+c+d+e)				6.14	
			Cost for 1.25 cum = a+b+c+d+e+f				619.65	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				495.72	
						say	***496.00***	
2.4 (i)		**B**	**Cement Concrete Grade M-15 & M-20**					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor for dismantling and loading	day	1.250	310.00	387.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				64.05	
			d) Overhead charges @ 10 % on (a+b+c)				59.78	
			e) Contractor's profit @ 10 % on (a+b+c+d)				65.76	
			f) Cess @ 1 % on (a+b+c+d+e)				7.23	
			Cost for 1.25 cum = a+b+c+d+e+f				730.57	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				584.46	
						say	***584.00***	
2.4 (i)		**C**	**Prestressed / Reinforced cement concrete grade M-20 & above**					
			a) Labour					
			Mate	day	0.150	354.00	53.10	L-12

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Blacksmith	day	0.250	442.00	110.50	L-02
			Mazdoor for dismantling, loading and unloading	day	3.500	310.00	1085.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				165.26	
			d) Overhead charges @ 10 % on (a+b+c)				154.24	
			e) Contractor's profit @ 10 % on (a+b+c+d)				169.67	
			f) Cess @ 1% on (a+b+c+d+e)				18.66	
			Cost for 1.25 cum = a+b+c+d+e+f				1884.98	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				1507.98	
						say	***1508.00***	
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	354.00	7.08	L-12
			Mazdoor for loading and unloading	day	0.250	310.00	77.50	L-13
			Mazdoor with Pneumatic breaker	day	0.250	354.00	88.50	L-14
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.5 cum per hour	hour	0.670	575.22	385.40	P&M-001
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				82.44	
			d) Overhead charges @ 10 % on (a+b+c)				76.95	
			e) Contractor's profit @ 10 % on (a+b+c+d)				84.64	
			f) Cess @ 1% on (a+b+c+d+e)				9.31	
			Cost for 1.25 cum = a+b+c+d+e+f				940.37	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				752.30	
						say	***752.00***	
2.4 II		**B**	**Prestressed / reinforced cement concrete grade M-20 & above**					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor with Pneumatic breaker	day	0.660	354.00	233.64	L-14
			Blacksmith	day	0.250	442.00	110.50	L-02
			Mazdoor for loading and unloading	day	0.250	310.00	77.50	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.00 cum per hour	hour	1.000	575.22	575.22	P&M-001
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				137.17	
			d) Overhead charges @ 10 % on (a+b+c)				128.03	
			e) Contractor's profit @ 10 % on (a+b+c+d)				140.83	
			f) Cess @ 1% on (a+b+c+d+e)				15.49	
			Cost for 1.25 cum = a+b+c+d+e+f				1564.63	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				1251.70	
						say	***1252.00***	
2.4		**(ii)**	**Dismantling Brick / Tile work**					
		A	**In lime mortar**					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor for dismantling, loading and unloading	day	0.500	310.00	155.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				34.88	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			d) Overhead charges @ 10 % on (a+b+c)				32.55	
			e) Contractor's profit @ 10 % on (a+b+c+d)				35.81	
			f) Cess @ 1% on (a+b+c+d+e)				3.94	
			Cost for 1.25 cum = a+b+c+d+e+f				397.81	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				318.25	
						say	***318.00***	
2.4 (ii)		**B**	**In cement mortar**					
			a) Labour					
			Mate	day	0.030	354.00	10.62	L-12
			Mazdoor for dismantling, loading and unloading	day	0.750	310.00	232.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				44.60	
			d) Overhead charges @ 10 % on (a+b+c)				41.63	
			e) Contractor's profit @ 10 % on (a+b+c+d)				45.79	
			f) Cess @ 1% on (a+b+c+d+e)				5.04	
			Cost for 1.25 cum = a+b+c+d+e+f				508.73	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				406.98	
						say	***407.00***	
2.4 (ii)		**C**	**In mud mortar**					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor for dismantling and loading	day	0.400	310.00	124.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				31.16	
			d) Overhead charges @ 10 % on (a+b+c)				29.08	
			e) Contractor's profit @ 10 % on (a+b+c+d)				31.99	
			f) Cess @ 1% on (a+b+c+d+e)				3.52	
			Cost for 1.25 cum = a+b+c+d+e+f				355.38	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				284.30	
						say	***284.00***	
2.4 (ii)		**D**	**Dry brick pitching or brick soling**					
			a) Labour					
			Mate	day	0.014	354.00	4.96	L-12
			Mazdoor for Dismantling, loading and unloading	day	0.350	310.00	108.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				29.04	
			d) Overhead charges @ 10 % on (a+b+c)				27.11	
			e) Contractor's profit @ 10 % on (a+b+c+d)				29.82	
			f) Cess @ 1% on (a+b+c+d+e)				3.28	
			Cost for 1.25 cum = a+b+c+d+e+f				331.26	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				265.01	
						say	***265.00***	
2.4		**(iii)**	**Dismantling Stone Masonry**					
		A	**Rubble stone masonry in lime mortar**					
			a) Labour					
			Mate	day	0.024	354.00	8.50	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.600	310.00	186.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			c) GST @ 12 % on (a+b)				38.77	
			d) Overhead charges @ 10 % on (a+b+c)				36.18	
			e) Contractor's profit @ 10 % on (a+b+c+d)				39.80	
			f) Cess @ 1% on (a+b+c+d+e)				4.38	
			Cost for 1.25 cum = a+b+c+d+e+f				442.18	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				353.74	
						say	***354.00***	
2.4 (iii)		**B**	**Rubble stone masonry in cement mortar.**					
			a) Labour					
			Mate	day	0.030	354.00	10.62	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.750	310.00	232.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				44.60	
			d) Overhead charges @ 10 % on (a+b+c)				41.63	
			e) Contractor's profit @ 10 % on (a+b+c+d)				45.79	
			f) Cess @ 1% on (a+b+c+d+e)				5.04	
			Cost for 1.25 cum = a+b+c+d+e+f				508.73	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				406.98	
						say	***407.00***	
2.4 (iii)		**C**	**Rubble Stone Masonry in mud mortar.**					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.500	310.00	155.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				34.88	
			d) Overhead charges @ 10 % on (a+b+c)				32.55	
			e) Contractor's profit @ 10 % on (a+b+c+d)				35.81	
			f) Cess @ 1% on (a+b+c+d+e)				3.94	
			Cost for 1.25 cum = a+b+c+d+e+f				397.81	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				318.25	
						say	***318.00***	
2.4 (iii)		**D**	**Dry rubble masonry**					
			a) Labour					
			Mate	day	0.018	354.00	6.37	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.450	310.00	139.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				32.93	
			d) Overhead charges @ 10 % on (a+b+c)				30.74	
			e) Contractor's profit @ 10 % on (a+b+c+d)				33.81	
			f) Cess @ 1% on (a+b+c+d+e)				3.72	
			Cost for 1.25 cum = a+b+c+d+e+f				375.62	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				300.50	
						say	***301.00***	
2.4 (iii)		**E**	**Dismantling stone pitching/ dry stone spalls.**					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.400	310.00	124.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			c) GST @ 12 % on (a+b)				31.16	
			d) Overhead charges @ 10 % on (a+b+c)				29.08	
			e) Contractor's profit @ 10 % on (a+b+c+d)				31.99	
			f) Cess @ 1% on (a+b+c+d+e)				3.52	
			Cost for 1.25 cum = a+b+c+d+e+f				355.38	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				284.30	
						say	***284.00***	
2.4 (iii)		F	**Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.**					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor for dismantling, loading and unloading	day	0.500	310.00	155.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				34.88	
			d) Overhead charges @ 10 % on (a+b+c)				32.55	
			e) Contractor's profit @ 10 % on (a+b+c+d)				35.81	
			f) Cess @ 1% on (a+b+c+d+e)				3.94	
			Cost for 1.25 cum = a+b+c+d+e+f				397.81	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				318.25	
						say	***318.00***	
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	354.00	21.24	L-12
			Carpenter	day	0.500	442.00	221.00	L-04
			Mazdoor for dismantling, loading and unloading.	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	476.11	128.55	P&M-053
			c) GST @ 12 % on (a+b)				81.69	
			d) Overhead charges @ 10 % on (a+b+c)				76.25	
			e) Contractor's profit @ 10 % on (a+b+c+d)				83.87	
			f) Cess @ 1% on (a+b+c+d+e)				9.23	
			Cost for 1.25 cum = a+b+c+d+e+f				931.83	
			Rate per cum = (a+b+c+d+e+f)/ 1.25				745.46	
						say	***745.00***	
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	354.00	49.56	L-12
			Blacksmith	day	1.000	442.00	442.00	L-02
			Mazdoor for dismantling, loading and unloading	day	2.500	310.00	775.00	L-13
			Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				31.66	
			b) Machinery					
			Tractor-trolley	hour	0.170	476.11	80.94	P&M-053
			c) GST @ 12 % on (a+b)				165.50	
			d) Overhead charges @ 10 % on (a+b+c)				154.47	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				169.91	
			f) Cess @ 1% on (a+b+c+d+e)				18.69	
			Rate per tonne = a+b+c+d+e+f				1887.73	
						say	***1888.00***	
2.4 (v)		**B**	**Excluding dismembering.**					
			a) Labour					
			Mate	day	0.220	354.00	77.88	L-12
			Mazdoor for dismantling, loading and unloading	day	2.000	310.00	620.00	L-13
			Blacksmith	day	0.500	442.00	221.00	L-02
			Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				22.97	
			b) Machinery					
			Tractor-trolley	hour	0.170	476.11	80.94	P&M-053
			c) GST @ 12 % on (a+b)				122.73	
			d) Overhead charges @ 10 % on (a+b+c)				114.55	
			e) Contractor's profit @ 10 % on (a+b+c+d)				126.01	
			f) Cess @ 1% on (a+b+c+d+e)				13.86	
			Rate per tonne = a+b+c+d+e+f				1399.94	
						say	***1400.00***	
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	354.00	3.54	L-12
			Blacksmith	day	0.130	442.00	57.46	L-02
			Mazdoor	day	0.130	310.00	40.30	L-13
			c) GST @ 12 % on (a+b)				12.16	
			c) Overhead charges @ 10 % on (a+b)				11.35	
			d) Contractor's profit @ 10 % on (a+b+c)				12.48	
			e) Cess @ 1% on (a+b+c+d)				1.37	
			Cost for 10 rivets = a+b+c+d+e				138.66	
			Rate for each rivet = (a+b+c+d+e)/10				13.87	
						say	***14.00***	
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	354.00	49.56	L-12
			Mazdoor	day	3.500	310.00	1085.00	L-13
			c) GST @ 12 % on (a+b)				136.15	
			c) Overhead charges @ 10 % on (a+b)				127.07	
			d) Contractor's profit @ 10 % on (a+b+c)				139.78	
			e) Cess @ 1% on (a+b+c+d)				15.38	
			Rate per1000 Nos = a+b+c+d+e				1552.94	
						say	***1553.00***	
2.4 (iv)		**B**	**In mud mortar**					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor	day	1.250	310.00	387.50	L-13
			b) GST @ 12 % on (a)				48.62	
			c) Overhead charges @ 10 % on (a+b)				45.38	
			d) Contractor's profit @ 10 % on (a+b+c)				49.92	
			e) Cess @ 1% on (a+b+c+d)				5.49	
			Rate per1000 Nos = a+b+c+d+e				554.61	
						say	***555.00***	

CHAPTER-2
SITE CLEARANCE

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in 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	354.00	21.24	L-12
			Mazdoor	day	1.400	310.00	434.00	L-13
			b) GST @ 12 % on (a)				54.63	
			c) Overhead charges @ 10 % on (a+b)				50.99	
			d) Contractor's profit @ 10 % on (a+b+c)				56.09	
			e) Cess @ 1% on (a+b+c+d)				6.17	
			Rate per cum = a+b+c+d+e				623.12	
						say	***623.00***	
2.4 (vii)		B	**In Mud mortar**					
			a) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor	day	0.300	310.00	93.00	L-13
			b) GST @ 12 % on (a)				11.58	
			c) Overhead charges @ 10 % on (a+b)				10.81	
			d) Contractor's profit @ 10 % on (a+b+c)				11.89	
			e) Cess @ 1% on (a+b+c+d)				1.31	
			Rate per cum = a+b+c+d+e				132.13	
						say	***132.00***	
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	354.00	56.64	L-12
			Mazdoor for scarping and loading	day	4.000	310.00	1240.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.320	476.11	152.36	P&M-053
			c) GST @ 12 % on (a+b)				173.88	
			d) Overhead charges @ 10 % on (a+b+c)				162.29	
			e) Contractor's profit @ 10 % on (a+b+c+d)				178.52	
			f) Cess @ 1% on (a+b+c+d+e)				19.64	
			Cost for 100 sqm = a+b+c+d+e+f				1983.33	
			Rate per sqm = (a+b+c+d+e+f)/100				19.83	
						say	***20.00***	
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	354.00	7.08	L-12
			Mazdoor	day	0.520	310.00	161.20	L-13
			b) GST @ 12 % on (a)				20.19	
			c) Overhead charges @ 10 % on (a+b)				18.85	
			d) Contractor's profit @ 10 % on (a+b+c)				20.73	
			e) Cess @ 1% on (a+b+c+d)				2.28	
			Rate per meter = a+b+c+d+e				230.33	
						say	***230.00***	
2.4 (ix)		B	**Above 600 mm to 900 mm dia**					
			a) Labour					
			Mate	day	0.030	354.00	10.62	L-12

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Mazdoor	day	0.700	310.00	217.00	L-13
			b) GST @ 12 % on (a)				27.31	
			c) Overhead charges @ 10 % on (a+b)				25.49	
			d) Contractor's profit @ 10 % on (a+b+c)				28.04	
			e) Cess @ 1% on (a+b+c+d)				3.08	
			Rate per meter = a+b+c+d+e				311.54	
						say	***312.00***	
2.4 (ix)		**C**	**Above 900 mm**					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor	day	1.200	310.00	372.00	L-13
			b) GST @ 12 % on (a)				46.76	
			c) Overhead charges @ 10 % on (a+b)				43.65	
			d) Contractor's profit @ 10 % on (a+b+c)				48.01	
			e) Cess @ 1% on (a+b+c+d)				5.28	
			Rate per meter = a+b+c+d+e				533.40	
						say	***533.00***	
		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	354.00	21.24	L-12
			Mazdoor for dismantling, loading and unloading	day	1.500	310.00	465.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.380	476.11	180.92	P&M-053
			c) GST @ 12 % on (a+b)				80.06	
			d) Overhead charges @ 10 % on (a+b+c)				74.72	
			e) Contractor's profit @ 10 % on (a+b+c+d)				82.19	
			f) Cess @ 1% on (a+b+c+d+e)				9.04	
			Rate per cum = a+b+c+d+e+f				913.17	
						say	***913.00***	
2.5 I		**B**	**Granular courses**					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor for dismantling, loading and unloading.	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.330	476.11	157.12	P&M-053
			c) GST @ 12 % on (a+b)				57.75	
			d) Overhead charges @ 10 % on (a+b+c)				53.90	
			e) Contractor's profit @ 10 % on (a+b+c+d)				59.29	
			f) Cess @ 1% on (a+b+c+d+e)				6.52	
			Rate per cum = a+b+c+d+f				658.74	
						say	***659.00***	

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
2.5		II	**By Mechanical Means**					
		A	**Bituminous course**					
			a) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor	day	0.300	310.00	93.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.380	476.11	180.92	P&M-053
			Farm tractor with ripper @ 60 cum per hour	hour	0.020	420.35	8.41	P&M-055
			c) GST @ 12 % on (a+b)				34.30	
			d) Overhead charges @ 10 % on (a+b+c)				32.02	
			e) Contractor's profit @ 10 % on (a+b+c+d)				35.22	
			f) Cess @ 1% on (a+b+c+d+e)				3.84	
			Rate per cum = a+b+c+d+f				391.25	
						say	***391.00***	
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	354.00	10.62	L-12
			Semi skilled mazdoor for operating pneumatic tools	day	0.500	354.00	177.00	L-14
			Mazdoors as helpers including loading and unloading	day	0.500	310.00	155.00	L-13
			b) Machinery					
			Air compressor 250 cfm with two leads for pneumatic cutters/ hammers @ 1 cum per hour	hour	1.000	575.22	575.22	P&M-001
			Tractor-trolley	hour	0.400	476.11	190.44	P&M-053
			Joint Cutting Machine with 2-3 blades	hour	1.000	125.66	125.66	P&M-083
			c) GST @ 12 % on (a+b)				148.07	
			d) Overhead charges @ 10 % on (a+b+c)				138.20	
			e) Contractor's profit @ 10 % on (a+b+c+d)				152.02	
			f) Cess @ 1% on (a+b+c+d+e)				16.72	
			Rate per cum = a+b+c+d+f				1688.95	
						say	***1689.00***	
		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	0.010	354.00	3.54	L-12
			Mazdoor including loading and unloading	day	0.150	310.00	46.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.050	476.11	23.81	P&M-053
			c) GST @ 12 % on (a+b)				8.86	
			d) Overhead charges @ 10 % on (a+b+c)				8.27	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				9.10	
			f) Cess @ 1% on (a+b+c+d+e)				1.00	
			Rate per metre = a+b+c+d+e+f				101.08	
						say	***101.00***	
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	354.00	3.54	L-12
			Mazdoor including loading and unloading	day	0.150	310.00	46.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.200	476.11	95.22	P&M-053
			c) GST @ 12 % on (a+b)				17.43	
			d) Overhead charges @ 10 % on (a+b+c)				16.27	
			e) Contractor's profit @ 10 % on (a+b+c+d)				17.90	
			f) Cess @ 1% on (a+b+c+d+e)				1.97	
			Cost for 10 m = a+b+c+d+e+f				198.83	
			Rate per metre = (a+b+c+d+e+f)/10				19.88	
						say	***20.00***	
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	354.00	5.31	L-12
			Mazdoor including loading and unloading	day	0.225	310.00	69.75	L-13
			b) Machinery					
			Tractor-trolley	hour	0.300	476.11	142.83	P&M-053
			c) GST @ 12 % on (a+b)				26.15	
			d) Overhead charges @ 10 % on (a+b+c)				24.40	
			e) Contractor's profit @ 10 % on (a+b+c+d)				26.84	
			f) Cess @ 1% on (a+b+c+d+e)				2.95	
			Cost for 10 m = a+b+c+d+e+f				298.23	
			Rate per metre = (a+b+c+d+e+f)/10				29.82	
						say	***30.00***	
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	354.00	46.02	L-12
			Mazdoor	day	0.750	310.00	232.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.150	476.11	71.42	P&M-053
			c) GST @ 12 % on (a+b)				41.99	
			d) Overhead charges @ 10 % on (a+b+c)				39.19	
			e) Contractor's profit @ 10 % on (a+b+c+d)				43.11	
			f) Cess @ 1% on (a+b+c+d+e)				4.74	
			Rate for one 5th KM stone =				478.97	
						say	***479.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
	B		**Ordinary KM Stone**					
			Quantity of cement concrete = 0.269 cum					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	476.11	47.61	P&M-053
			c) GST @ 12 % on (a+b)				25.16	
			d) Overhead charges @ 10 % on (a+b+c)				23.49	
			e) Contractor's profit @ 10 % on (a+b+c+d)				25.83	
			f) Cess @ 1% on (a+b+c+d+e)				2.84	
			Rate for one ordinary KM stone =				287.01	
						say	***287.00***	
	C		**Hectometre Stone**					
			Quantity of cement concrete = 0.048 cum					
			a) Labour					
			Mate	day	0.004	354.00	1.42	L-12
			Mazdoor	day	0.100	310.00	31.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.020	476.11	9.52	P&M-053
			c) GST @ 12 % on (a+b)				5.03	
			d) Overhead charges @ 10 % on (a+b+c)				4.70	
			e) Contractor's profit @ 10 % on (a+b+c+d)				5.17	
			f) Cess @ 1% on (a+b+c+d+e)				0.57	
			Rate for one Hectometre stone = a+b+c+d+e+f				57.41	
						say	***57.00***	
2.11	**202**		**Dismantling of Fencing**					
			Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable material and unserviceable material separately.					
			Unit = running metre					
			Taking output = 30 metres					
			a) Labour					
			Mate	day	0.150	354.00	53.10	L-12
			Mazdoor including loading and unloading	day	3.000	310.00	930.00	L-13
			Blacksmith	day	0.750	442.00	331.50	L-02
			b) Machinery					
			Tractor-trolley	hour	0.150	476.11	71.42	P&M-053
			c) GST @ 12 % on (a+b)				166.32	
			d) Overhead charges @ 10 % on (a+b+c)				155.23	
			e) Contractor's profit @ 10 % on (a+b+c+d)				170.76	
			f) Cess @ 1% on (a+b+c+d+e)				18.78	
			Cost for 30 metres = a+b+c+d+e+f				1897.11	
			Rate per metre = (a+b+c+d+e+f)/30				63.24	
						say	***63.00***	
2.12	**202**		**Dismantling of CI Water Pipe Line**					
			Dismantling of CI water pipe line 600 mm dia including disposal with all lifts and lead upto 1000 metres and stacking of serviceable material and unserviceable material separately under supervision of concerned department					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.090	354.00	31.86	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			Plumber	day	0.250	442.00	110.50	L-02
			b) Machinery					
			Truck 10 tonne capacity	hour	0.250	641.59	160.40	P&M-057
			Light Crane 3 tonne capacity	hour	0.500	433.63	216.82	P&M-013
			c) GST @ 12 % on (a+b+c)				136.75	
			d) Overhead charges @ 10 % on (a+b+c)				127.63	
			e) Contractor's profit @ 10 % on (a+b+c+d)				140.40	
			f) Cess @ 1% on (a+b+c+d+e)				15.44	
			Cost for 10 metres = a+b+c+d+e+f				1559.80	
			Rate per metre = (a+b+c+d+e+f)/10				155.98	
						say	***156.00***	

Note The rate analysis does not include any excavation in earth or dismantling of masonry works which are to be measured and paid separately.

2.13 **202** **Removal of Cement Concrete Pipe of Sewer Gutter**

Removal of cement concrete pipe of sewer gutter 1500 mm dia under the supervision of concerned department including disposal with all lifts and up to a lead of 1000 metres and stacking of serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works.

Unit = running metre

Taking output = 10 metres

a) Labour					
Mate	day	0.100	354.00	35.40	L-12
Mazdoor	day	2.500	310.00	775.00	L-13
b) Machinery					
Crane 5 tonne capacity	hour	0.300	742.48	222.74	P&M-070
Truck flat body 10 tonne	hour	1.000	641.59	641.59	P&M-057
c) GST @ 12 % on (a+b+c)				200.97	
d) Overhead charges @ 10 % on (a+b+c)				187.57	
e) Contractor's profit @ 10 % on (a+b+c+d)				206.33	
f) Cess @ 1% on (a+b+c+d+e)				22.70	
Cost for 10 metres = a+b+c+d+e+f				2292.30	
Rate per metre = (a+b+c+d+e+f)/10				229.23	
			say	***229.00***	

Note The rate analysis does not include any excavation in earth or dismantling of masonry works which are to be measured and paid separately.

2.14 **202** **Removal of Telephone / Electric Poles and Lines**

Removal of telephone / Electric poles including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and up to a lead of 1000 metres and stacking the serviceable and unserviceable material separately

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Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Unit = each					
			Taking output = 30 Nos					
			a) Labour					
			Mate	day	0.480	354.00	169.92	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			Electrician/Lineman	day	2.000	442.00	884.00	L-02
			b) Machinery					
			Tractor-trolley	hour	1.500	476.11	714.17	P&M-053
			c) GST @ 12 % on (a+b+c)				584.17	
			d) Overhead charges @ 10 % on (a+b+c)				545.23	
			e) Contractor's profit @ 10 % on (a+b+c+d)				599.75	
			f) Cess @ 1% on (a+b+c+d+e)				65.97	
			Cost for 30 poles = a+b+c+d				6663.21	
			Rate per pole = (a+b+c+d)/30				222.11	
						say	***222.00***	

Chapter – 3

EARTHWORK, EROSION CONTROL AND DRAINAGE

Preamble:

1 The rates have been analysed using mechanical means. Manual means for certain items have also been provided which can be used for areas inaccessible to machines and also for small jobs.

2 In the rate analyses of earthwork, compacted volume of earth has been considered.

3 Cutting of earth by dozer has been proposed where the cut earth can be utilized for filling for embankment within a lead upto 100 m.

4 Where lead for transporting of earth is more than 100 m, excavator and tipper have been provided.

5 The rate caters for disposal of unsuitable soil only upto a distance of 1 km. The cost of transportation beyond the initial lead of 1 km will be paid separately based on tonne-kilometerage.

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

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

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

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

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

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

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

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

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

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

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
3.1	301		**Excavation in Soil by Manual Means .**					
			Excavation for roadway in soil using manual means including loading in truck for carrying of cut earth to embankment site with all lifts and lead upto1000 metres.					
			Unit = cum					
			Taking output = 120 cum					
			a) Labour					
			Mate	day	1.800	354.00	637.20	L-12
			Mazdoor	day	45.000	310.00	13950.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	641.59	6415.90	P&M-057
			c) GST @ 12 % on (a+b)				2520.37	
			d) Overhead charges @ 10 % on (a+b+c)				2352.35	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2587.58	
			f) Cess @ 1% on (a+b+c+d+e)				284.63	
			Cost of 120 cum = a+b+c+d+e+f				28748.03	
			Rate per cum = (a+b+c+d+e+f)/120				239.57	
						say	***240.00***	
		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.					
3.2	301		**Excavation in Ordinary Rock by Manual Means**					
			Excavation in ordinary rock using manual means including loading in a truck and carrying of excavated material to embankment site with in all lifts and leads upto 1000 metres					
			Unit = cum					
			Taking output = 120 cum					
			a) Labour					
			Mate	day	2.800	354.00	991.20	L-12
			Mazdoor	day	70.000	310.00	21700.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	641.59	6415.90	P&M-057
			c) GST @ 12 % on (a+b)				3492.85	
			d) Overhead charges @ 10 % on (a+b+c)				3260.00	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3586.00	
			f) Cess @ 1% on (a+b+c+d+e)				394.46	
			Cost of 120 cum = a+b+c+d+e+f				39840.41	
			Rate per cum = (a+b+c+d+e+f)/120				332.00	
						say	***332.00***	
		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.					
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	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Dozer, 80 HP @ 30 cum per hour	hour	6.000	4237.17	25423.02	P&M-014
			c) GST @ 12 % on (a+b)				3128.56	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			d) Overhead charges @ 10 % on (a+b+c)				2919.99	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3211.99	
			f) Cess @ 1% on (a+b+c+d+e)				353.32	
			Cost for 180 cum = a+b+c+d+e+f				35685.20	
			Rate per cum = (a+b+c+d+e+f)/180				198.25	
						say	***198.00***	
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	354.00	42.48	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			b) Machinery					
			Dozer, 80 HP @ 20 cum per hour	hour	6.000	4237.17	25423.02	P&M-014
			c) GST @ 12 % on (a+b)				3167.46	
			d) Overhead charges @ 10 % on (a+b+c)				2956.30	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3251.93	
			f) Cess @ 1% on (a+b+c+d+e)				357.71	
			Cost for 108 cum = a+b+c+d+e+f				36128.90	
			Rate per cum = (a+b+c+d+e+f)/108				334.53	
						say	***335.00***	
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	354.00	77.88	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			b) Machinery					
			Dozer, 80 HP @ 30 cum per hour	hour	6.000	4237.17	25423.02	P&M-014
			Air compressor, 250 cfm with 2 jack hammer	hour	6.000	575.22	3451.32	P&M-001
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper10 tonne capacity	hour	11.250	779.65	8771.06	P&M-048
			c) Materials					
			Gelatin 80 per cent	kg	63.000	164.60	10369.80	M-104
			Electric Detonators @ 1 detonator for 2 gelatin sticks of 125 gms each	each	252.000	11.04	2782.08	M-094 /100
			Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	(257.52)	(23176.80)	M-089
			d) GST @ 12 % on (a+b+c)				4537.71	
			e) Overhead charges @ 10 % on (a+b+c+d)				4235.20	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				4658.72	
			g) Cess @ 1% on (a+b+c+d+e+f)				512.46	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			Cost for 180 cum = a+b+c+d+e+f+g				51758.33	
			Rate per cum = (a+b+c+d+e+f+g)/180				287.55	
						say	***288.00***	
		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					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	1751.33	10507.98	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.000	779.65	12474.40	P&M-048
			c) GST @ 12 % on (a+b)				2835.68	
			d) Overhead charges @ 10 % on (a+b+c)				2646.64	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2911.30	
			f) Cess @ 1% on (a+b+c+d+e)				320.24	
			Cost for 360 cum = a+b+c+d+e+f				32344.56	
			Rate per cum = (a+b+c+d+e+f)/360				89.85	
						say	***90.00***	
3.7	301		**Excavation in Ordinary Rock using Hydraulic Excavator CK-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.					
			Unit = cum					
			Taking output = 240 cum					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Hydraulic Excavator 0.90 cum bucket capacity @ 36 cum per hour	hour	6.000	1751.33	10507.98	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	11.000	779.65	8576.15	P&M-048
			c) GST @ 12 % on (a+b)				2367.89	
			d) Overhead charges @ 10 % on (a+b+c)				2210.03	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2431.04	
			f) Cess @ 1% on (a+b+c+d+e)				267.41	
			Cost for 240 cum = a+b+c+d+e+f				27008.82	
			Rate per cum = (a+b+c+d+e+f)/240				112.54	
						say	***113.00***	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
3.8	301		**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**					
			Unit = cum					
			Taking output = 36 cum					
			a) Labour					
			Mate	day	0.400	354.00	141.60	L-12
			Mazdoor for trimming slopes including mannul loading in truck	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Hydraulic excavator with rock breaker attachment @ 6 cum per hour	hour	6.000	1751.33	10507.98	P&M-026
			Tipper 5.5 cum capacity, 1 trip per hour.	hour	6.500	779.65	5067.73	P&M-048
			Credit for excavated rock found suitable for use @ 50 per cent of excavated quantity	cum	18.000	(257.52)	(4635.36)	M-089
			c) GST @ 12 % on (a+b)				1701.83	
			d) Overhead charges @ 10 % on (a+b+c)				1588.38	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1747.22	
			f) Cess @ 1% on (a+b+c+d+e)				192.19	
			Cost for 36 cum = a+b+c+d+e+f				19411.57	
			Rate per cum = (a+b+c+d+e+f)/36				539.21	
						say	***539.00***	
		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 restricted/reduced to that extent.					
			3.Being small quantity, manual loading will be economical in this case and has been provided accordingly.					
3.8		B	**Manual Method**					
			Unit = cum					
			Taking output = 16 cum					
			a) Labour					
			Mate	day	1.640	354.00	580.56	L-12
			Mazdoor including loading in truck	day	16.000	310.00	4960.00	L-13
			Chiseller	day	24.000	354.00	8496.00	L-05
			Blacksmith	day	1.000	442.00	442.00	L-02
			b) Machinery					
			Tipper 5.5 cum capacity, 1 trip per hour.	hour	2.900	779.65	2260.99	P&M-048
			Credit for excavated rock found suitable for use @ 50 per cent of excavated	cum	8.000	(257.52)	(2060.16)	M-089
			c) GST @ 12 % on (a+b)				1761.53	
			d) Overhead charges @ 10 % on (a+b+c)				1644.09	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1808.50	
			f) Cess @ 1% on (a+b+c+d+e)				198.94	
			Cost for 16 cum = a+b+c+d+e+f				20092.45	
			Rate per cum = (a+b+c+d+e+f)/16				1255.78	
						say	***1256.00***	
		Note	1. Credit is considered for 50 per cent of quantity of work.					
			2. Loading for disposal will be done manually, being small quantity.					
			3. In case some rock is issued to contractor at site, the item of carriage shall be omitted to the extent of quantity issued to the contractor.					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
3.9	301		**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					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.220	354.00	77.88	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.500	354.00	177.00	L-03
			b) Machinery					
			Dozer 80 HP @ 30 cum per hour	hour	6.000	4237.17	25423.02	P&M-014
			Air compressor, 250 cfm with 2 jack hammers	hour	6.000	575.22	3451.32	P&M-001
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	8.200	779.65	6393.13	P&M-048
			c) Materials					
			Gelatin 80 per cent	kg	63.000	164.60	10369.80	M-104
			Electric Detonators @ 1 detonator for1/2 gelatin stick of 125 gms each	each	1008.000	11.04	11128.32	M-094 /100
			Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	(257.52)	(23176.80)	M-089
			Add 5 per cent of cost of a+b+c towards muffling arrangements to guard against any rock fly off during blasting				3352.39	
			d) GST @ 12 % on (a+b+c)				5666.81	
			e) Overhead charges @ 10 % on (a+b+c+d)				5289.03	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				5817.93	
			g) Cess @ 1% on (a+b+c+d+e+f)				639.97	
			Cost for 180 cum = a+b+c+d+e+f+g				64637.18	
			Rate per cum = (a+b+c+d+e+f+g)/180				359.10	
						say	***359.00***	
		Note	1. Credit is considered for 50 per cent of quantity of blastered rock, if found suitable for construction.. 2. In case some rock is issued to the contractor at site, the item of carriage shall be reduced to that extent.					
3.10	301		**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.					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Hydraulic excavator 0.90 cum bucket capacity @ 50 cum per hour	hour	6.000	1751.33	10507.98	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	13.640	779.65	10634.43	P&M-048
			c) GST @ 12 % on (a+b)				2614.89	
			d) Overhead charges @ 10 % on (a+b+c)				2440.56	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				2684.62	
			f) Cess @ 1% on (a+b+c+d+e)				295.31	
			Cost for 300 cum = a+b+c+d+e+f				29826.11	
			Rate per cum = (a+b+c+d+e+f)/300				99.42	
						say	***99.00***	
3.11	301		**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.					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Excavator0.90 cum bucket capacity @ 60 cum per hour	hour	6.000	1751.33	10507.98	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.360	779.65	12755.07	P&M-048
			c) GST @ 12 % on (a+b)				2869.36	
			d) Overhead charges @ 10 % on (a+b+c)				2678.07	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2945.88	
			f) Cess @ 1% on (a+b+c+d+e)				324.05	
			Cost for 360 cum = a+b+c+d+e+f				32728.73	
			Rate per cum = (a+b+c+d+e+f)/360				90.91	
						say	***91.00***	
		Note	This item does not include replacement of unsuitable soil by suitable soil. Replacement, where required, is to be provided and paid separately under clause 305.					
3.12	303		**Presplitting 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					
			Unit = sqm					
			Taking output = 400 sqm(120 cum considering 300mm average depth of excavation over the existing rock face)					
			a) Labour					
			Mate	day	0.600	354.00	212.40	L-12
			Mazdoor	day	15.000	310.00	4650.00	L-13
			b) Machinery					
			Air compressor 250 cfm with 2 leads @ 20 cum per hour	hour	6.000	575.22	3451.32	P&M-001
			Dozer, 80 HP	hour	6.000	4237.17	25423.02	P&M-014
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			c) Materials					
			Gelatin 80 per cent	kg	42.000	164.60	6913.20	M-104
			Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	672.000	11.04	7418.88	M-094 /100
			d) GST @ 12 % on (a+b+c)				6774.98	
			e) Overhead charges @ 10 % on (a+b+c+d)				6323.32	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				6955.65	
			g) Cess @ 1% on (a+b+c+d+e+f)				765.12	
			Cost for 400 sqm = a+b+c+d+e+f+g				77277.27	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			Rate per sqm = (a+b+c+d+e+f+g)/400				193.19	
						say	***193.00***	
		Note	In case blasted rock is used to the contractor against payment for constructed work, the cost of carriage shall be reduced to that extent.					
3.13	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**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Manual Means (Depth upto 3 m)**					
			a) Labour					
			Mate	day	0.320	354.00	113.28	L-12
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) GST @ 12 % on (a)				311.19	
			c) Overhead charges @ 10 % on (a+b)				290.45	
			d) Contractor's profit @ 10 % on (a+b+c)				319.49	
			e) Cess @ 1% on (a+b+c+d)				35.14	
			Cost for 10 cum = a+b+c+d+e				3549.55	
			Rate per cum = (a+b+c+d+e)/10				354.96	
						say	***355.00***	
		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	354.00	113.28	L-12
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1751.33	10507.98	P&M-026
			c) GST @ 12 % on (a+b)				1572.15	
			d) Overhead charges @ 10 % on (a+b+c)				1467.34	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1614.08	
			f) Cess @ 1% on (a+b+c+d+e)				177.55	
			Cost for 300 cum = a+b+c+d+e+f				17932.38	
			Rate per cum = (a+b+c+d+e+f)/300				59.77	
						say	***60.00***	
		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	354.00	141.60	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) GST @ 12 % on (a)				388.99	
			c) Overhead charges @ 10 % on (a+b)				363.06	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			d) Contractor's profit @ 10 % on (a+b+c)				399.37	
			e) Cess @ 1% on (a+b+c+d)				43.93	
			Cost for 10 cum = a+b+c+d+e				4436.95	
			Rate per cum = (a+b+c+d+e)/10				443.70	
						say	***444.00***	
		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..					
3.13 (ii)		B	**Mechanical Means**					
			Unit = cum					
			Taking output = 216 cum					
			a) Labour					
			Mate	day	0.240	354.00	84.96	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1751.33	10507.98	P&M-026
			c) GST @ 12 % on (a+b)				1494.35	
			d) Overhead charges @ 10 % on (a+b+c)				1394.73	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1534.20	
			f) Cess @ 1% on (a+b+c+d+e)				168.76	
			Cost for 216 cum = a+b+c+d+e+f				17044.98	
			Rate per cum = (a+b+c+d+e+f)/216				78.91	
						say	***79.00***	
		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	354.00	187.62	L-12
			ii) Driller	day	0.840	354.00	297.36	L-06
			iii) Blaster	day	0.400	354.00	141.60	L-03
			iv) Mazdoor	day	12.000	310.00	3720.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 jack hammer @ 15 cum per hour	hour	0.667	575.22	383.67	P&M-001
			c) Material					
			Blasting Material	kg	3.500	164.60	576.10	M-104
			Detonator electric	each	14.000	11.04	154.56	M-094 /100
			d) GST @ 12 % on (a+b+c)				655.31	
			e) Overhead charges @ 10 % on (a+b+c+d)				611.62	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				672.78	
			g) Cess @ 1% on (a+b+c+d+e+f)				74.01	
			Cost for 10 cum = a+b+c+d+e+f+g				7474.63	
			Rate per cum = (a+b+c+d+e+f+g)/10				747.46	
						say	***747.00***	
		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.					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in 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	354.00	70.80	L-12
			Mazdoor	day	5.000	310.00	1550.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1 cum per hour	hour	10.000	575.22	5752.20	P&M-001
			c) GST @ 12 % on (a+b)				884.76	
			d) Overhead charges @ 10 % on (a+b+c)				825.78	
			e) Contractor's profit @ 10 % on (a+b+c+d)				908.35	
			f) Cess @ 1% on (a+b+c+d+e)				99.92	
			Cost for 10 cum = a+b+c+d+e+f				10091.81	
			Rate per cum = (a+b+c+d+e+f)/10				1009.18	
						say	***1009.00***	
		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	354.00	141.60	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Tractor-trolley	hour	2.670	476.11	1271.21	P&M-053
			c) Material					
			Selected earth for refilling	cum	5.000	201.77	1008.85	M-163
			d) GST @ 12 % on (a+b+c)				662.60	
			e) Overhead charges @ 10 % on (a+b+c+d)				618.43	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				680.27	
			g) Cess @ 1% on (a+b+c+d+e+f)				74.83	
			Cost for 10 cum = a+b+c+d+e+f+g				7557.79	
			Rate per cum = (a+b+c+d+e+f+g)/ 10				755.78	
						say	***756.00***	
		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					
3.13 (v)		B	**Mechanical Means**					
			a) Labour					
			i) Mate	day	0.080	354.00	28.32	L-12
			ii) Mazdoor for dressing sides, bottom and backfilling	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.170	1751.33	297.73	P&M-026

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.450	779.65	350.84	P&M-048
			c) Material					
			Selected earth for refilling	cum	5.000	201.77	1008.85	M-163
			d) GST @ 12 % on (a+b+c)				276.69	
			e) Overhead charges @ 10 % on (a+b+c+d)				258.24	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				284.07	
			g) Cess @ 1% on (a+b+c+d+e+f)				31.25	
			Cost for 10 cum = a+b+c+d+e+f+g				3155.99	
			Rate per cum = (a+b+c+d+e+f+g)/10				315.60	
						say	***316.00***	

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

3.14 305.4.3 **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.

Unit = sqm

Taking output = 100 sqm

a) Labour							
Mate	day	0.200	354.00	70.80	L-12
Mazdoor including loading and unloading	day	5.000	310.00	1550.00	L-13
b) Machinery							
Tractor-trolley	hour	1.670	476.11	795.10	P&M-053
c) GST @ 12 % on (a+b)				289.91	
d) Overhead charges @ 10 % on (a+b+c)				270.58	
e) Contractor's profit @ 10 % on (a+b+c+d)				297.64	
f) Cess @ 1% on (a+b+c+d+e)				32.74	
Cost for 100 sqm = a+b+c+d+e+f				3306.77	
Rate per sqm = (a+b+c+d+e+f)/100				33.07	
			say	***33.00***	

Note In case material is to be reused at site, transportation cost catered above for disposal shall be deleted.

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	354.00	3.54	L-12
Mazdoor	day	0.250	310.00	77.50	L-13
b) Machinery					
Tractor with ripper attachment @ 60 cum per hour	hour	0.080	420.35	33.63	P&M-055
Front end loader 1 cum bucket capacity @ 25 cum per hour	hour	0.200	1398.23	279.65	P&M-017
Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.230	779.65	179.32	P&M-048
c) GST @ 12 % on (a+b)				68.84	
d) Overhead charges @ 10 % on (a+b+c)				64.25	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				70.67	
			f) Cess @ 1% on (a+b+c+d+e)				7.77	
			Cost for 100 sqm = a+b+c+d+e+f				785.17	
			Rate per sqm = (a+b+c+d+e+f)/100				7.85	
						say	***8.00***	
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					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Hydraulic Excavator1 cum bucket capacity @ 60 cum per hour	hour	1.670	1751.33	2924.72	P&M-026
			Tipper 10 tonne capacity	tonne. km	160 x L	7.65	3672.00	Lead =3 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				367.20	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	4237.17	2118.59	P&M-014
			Motor grader for grading @ 100 cum per hour	hour	1.000	2917.70	2917.70	P&M-032
			Water tanker6 KL capacity	hour	4.000	544.25	2177.00	P&M-060
			Three wheel 80-100 kN Statis Roller	hour	1.000	733.63	733.63	P&M-059
			c) Material					
			Cost of water	KL	24.000	67.26	1614.24	M-189
			Compensation for earth taken from private land	cum	100.000	0.00	0.00	M-092
			d) GST @ 12 % on (a+b+c)				2021.91	
			e) Overhead charges @ 10 % on (a+b+c+d)				1887.12	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2075.83	
			g) Cess @ 1% on (a+b+c+d+e+f)				228.34	
			Cost for 100 cum = a+b+c+d+e+f+g				23062.44	
			Rate per cum = (a+b+c+d+e+f+g)/100				230.62	
						say	***231.00***	
			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.					
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	354.00	7.08	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	4237.17	2118.59	P&M-014

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			Motor grader for grading @ 100 cum per hour	hour	1.000	2917.70	2917.70	P&M-032
			Water tanker6 KL capacity	hour	4.000	544.25	2177.00	P&M-060
			Three wheel 80-100 kN Statis Roller	hour	1.000	733.63	733.63	P&M-059
			c) Material					
			Cost of water	KL	24.000	67.26	1614.24	M-189
			d) GST @ 12 % on (a+b+c)				1166.79	
			e) Overhead charges @ 10 % on (a+b+c+d)				1089.00	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1197.90	
			g) Cess @ 1% on (a+b+c+d+e+f)				131.77	
			Rate for 100 cum = a+b+c+d+e+f+g				13308.70	
			Rate per cum = (a+b+c+d+e+f+g)/100				133.09	
						say	***133.00***	
		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	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Hydraulic excavator1 cum bucket capacity @ 60 cum per hour	hour	1.670	1751.33	2924.72	P&M-026
			Tipper 10 tonne capacity	tonne.km	175xL	7.65	4016.25	Lead =3 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				401.63	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	4237.17	2118.59	P&M-014
			Motor grader for grading @ 50 cum per hour	hour	2.000	2917.70	5835.40	P&M-032
			Water tanker with 6 km lead	hour	4.000	544.25	2177.00	P&M-060
			Three wheel 80-100 kN Statis Roller	hour	1.250	733.63	917.04	P&M-059
			c) Material					
			Cost of water	KL	24.000	67.26	1614.24	M-189
			Compensation for earth taken from private land	cum	100.000	0.00	0.00	M-092
			d) GST @ 12 % on (a+b+c)				2439.48	
			e) Overhead charges @ 10 % on (a+b+c+d)				2276.85	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2504.54	
			g) Cess @ 1% on (a+b+c+d+e+f)				275.50	
			Cost for 100 cum = a+b+c+d+e+f+g				27825.40	
			Rate per cum = (a+b+c+d+e+f+g)/100				278.25	
						say	***278.00***	
3.19	305.3.4		**Compacting Original Ground**					
		Case-I	**Compacting original ground supporting sub-grade**					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			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	354.00	42.48	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			b) Machinery					
			Tractor with ripper attachment	hour	9.000	420.35	3783.15	P&M-055
			Motor grader for grading	hour	6.000	2917.70	17506.20	P&M-032
			Water tanker 6 KL capacity	hour	4.000	544.25	2177.00	P&M-060
			Three wheel 80-100 kN Statis Roller	hour	7.500	733.63	5502.23	P&M-059
			c) Material					
			Cost of water	KL	24.000	67.26	1614.24	M-189
			d) GST @ 12 % on (a+b+c)				3786.64	
			e) Overhead charges @ 10 % on (a+b+c+d)				3534.19	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3887.61	
			g) Cess @ 1% on (a+b+c+d+e+f)				427.64	
			Cost for 600 cum = a+b+c+d+e+f+g				43191.38	
			Rate per cum = (a+b+c+d+e+f+g)/600				71.99	
						say	***72.00***	
3.19	Case-II		**:Compacting original ground supporting embankment**					
			Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.					
			Unit = cum					
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Tractor with ripper attachment	hour	6.000	420.35	2522.10	P&M-055
			Three wheel 80-100 kN Statis Roller	hour	7.500	733.63	5502.23	P&M-059
			Water tanker6 KL capacity	hour	4.000	544.25	2177.00	P&M-060
			c) Material					
			Cost of water	KL	24.000	67.26	1614.24	M-189
			d) GST @ 12 % on (a+b+c)				1495.67	
			e) Overhead charges @ 10 % on (a+b+c+d)				1395.96	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1535.55	
			g) Cess @ 1% on (a+b+c+d+e+f)				168.91	
			Cost for 600 cum = (a+b+c+d+e+f+g)				17059.98	
			Rate per sqm = (a+b+c+d+e+f+g)/600				28.43	
						say	***28.00***	
3.20	305		**Stripping and Storing Top Soil**					
			Stripping, storing of top soil by road side at 15 m internal and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth.					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.200	354.00	70.80	L-12
			Mazdoor	day	5.000	310.00	1550.00	L-13
			b) Machinery					
			Dozer 80 HP @ 100 cum per hour	hour	0.100	4237.17	423.72	P&M-014

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			c) GST @ 12 % on (a+b)				245.34	
			d) Overhead charges @ 10 % on (a+b+c)				228.99	
			e) Contractor's profit @ 10 % on (a+b+c+d)				251.89	
			f) Cess @ 1% on (a+b+c+d+e)				27.71	
			Cost for 10 cum = (a+b+c+d+e+f)				2798.45	
			Rate per cum = (a+b+c+d+e+f)/10				279.85	
						say	***280.00***	
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.					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Dozer, 80 HP	hour	6.000	4237.17	25423.02	P&M-014
			c) GST @ 12 % on (a+b)				3128.56	
			d) Overhead charges @ 10 % on (a+b+c)				2919.99	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3211.99	
			f) Cess @ 1% on (a+b+c+d+e)				353.32	
			Cost for 300 cum = (a+b+c+d+e+f)				35685.20	
			Rate per cum = (a+b+c+d+e+f)/300				118.95	
						say	***119.00***	
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	354.00	42.48	L-12
			Mazdoor for preparation of ground and fetching of sods	day	3.000	310.00	930.00	L-13
			b) Machinery					
			Water tanker including watering for 3 months	hour	2.000	544.25	1088.50	P&M-060
			Tractor-trolley	hour	1.000	476.11	476.11	P&M-053
			c) Material					
			Farm yard manure @ 0.18 cum per 100 sqm at site of work	cum	0.180	134.51	24.21	M-167
			Cost of water	KL	12.000	67.26	807.12	M-189
			d) GST @ 12 % on (a+b+c)				404.21	
			e) Overhead charges @ 10 % on (a+b+c+d)				377.26	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				414.99	
			g) Cess @ 1% on (a+b+c+d+e+f)				45.65	
			Cost for 100 sqm = a+b+c+d+e+f+g				4610.53	
			Rate per 100 sqm = (a+b+c+d+e+f+g)/100				46.11	
						say	***46.00***	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in 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	354.00	141.60	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Water tanker 6 KL capacity including watering for 3 months	hour	14.000	544.25	7619.50	P&M-060
			Tractor-trolley	hour	2.400	476.11	1142.66	P&M-053
			c) Material					
			Seeds	kg	3.600	337.17	1213.81	M-162
			Sludge/Farm yard manure @ 0.18 cum per 100 sqm	cum	0.430	134.51	57.84	M-167
			Bitumen Emulsion	litre	55.200	47.12	2601.02	M-077
			Jute netting, open weave, 2.5 cm square opening	sqm	264.000	14.16	3738.24	M-121
			Cost of water for 3 months	KL	84.000	67.26	5649.84	M-189
			d) GST @ 12 % on (a+b+c)				3031.74	
			e) Overhead charges @ 10 % on (a+b+c+d)				2829.63	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3112.59	
			g) Cess @ 1% on (a+b+c+d+e+f)				342.38	
			Cost for 240 sqm = a+b+c+d+e+f+g				34580.85	
			Rate per sqm = (a+b+c+d+e+f+g)/240				144.09	
						say	***144.00***	
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	354.00	3.54	L-12
			Mazdoor for dressing of bed and side of drain	day	0.250	310.00	77.50	L-13
			b) Machinery					
			Hydraulic Excavator 0.3 cum bucket capacity @ 30 metres per hour	hour	0.330	1751.33	577.94	P&M-026
			c) GST @ 12 % on (a+b)				79.08	
			d) Overhead charges @ 10 % on (a+b+c)				73.81	
			e) Contractor's profit @ 10 % on (a+b+c+d)				81.19	
			f) Cess @ 1% on (a+b+c+d+e)				8.93	
			Cost for 10 metres = a+b+c+d+e+f				901.99	
			Rate per metre = (a+b+c+d+e+f)/10				90.20	
						say	***90.00***	
3.24		B	**Manual Means**					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			b) GST @ 12 % on (a)				77.80	
			c) Overhead charges @ 10 % on (a+b)				72.61	
			d) Contractor's profit @ 10 % on (a+b+c)				79.87	
			e) Cess @ 1% on (a+b+c+d)				8.79	
			Cost for 10 metres = a+b+c+d+e				887.39	
			Rate per metre = (a+b+c+d+e)/10				88.74	
						say	***89.00***	
		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.					
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	354.00	7.08	L-12
			Mazdoor for dressing of bed and side of drain	day	0.500	310.00	155.00	L-13
			b) Machinery					
			Hydraulic Excavator 0.3 cum bucket capacity @ 15 metres per hour	hour	0.670	1751.33	1173.39	P&M-026
			c) GST @ 12 % on (a+b)				160.26	
			d) Overhead charges @ 10 % on (a+b+c)				149.57	
			e) Contractor's profit @ 10 % on (a+b+c+d)				164.53	
			f) Cess @ 1% on (a+b+c+d+e)				18.10	
			Cost for 10 metres = a+b+c+d+e+f				1827.93	
			Rate per metre = (a+b+c+d+e+f)/10				182.79	
						say	***183.00***	
3.25		B	**Manual Means**					
			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			b) GST @ 12 % on (a)				116.70	
			c) Overhead charges @ 10 % on (a+b)				108.92	
			d) Contractor's profit @ 10 % on (a+b+c)				119.81	
			e) Cess @ 1% on (a+b+c+d)				13.18	
			Cost for 10 metres = a+b+c+d+e				1331.09	
			Rate per metre = (a+b+c+d+e)/10				133.11	
						say	***133.00***	
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					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor for excavation and back filling	day	2.000	310.00	620.00	L-13
			b) Material					
			Perforated pipe of cement concrete, internal dia 100 mm	metre	10.000	94.69	946.90	M-135
			Crushed stone as per table 300-3	cum	2.400	1283.19	3079.66	M-012
			c) GST @ 12 % on (a+b)				559.29	
			d) Overhead charges @ 10 % on (a+b+c)				522.00	
			e) Contractor's profit @ 10 % on (a+b+c+d)				574.20	
			f) Cess @ 1% on (a+b+c+d+e)				63.16	
			Cost for 10 metres = a+b+c+d+e+f				6379.37	
			Rate per metre = (a+b+c+d+e+f)/10				637.94	
						say	***638.00***	
		Note	Type of pipe may be modified depending upon provision in design.					
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	354.00	7.08	L-12
			Mazdoor for excavation and back filling with aggregates	day	1.500	310.00	465.00	L-13
			b) Material					
			Crushed stone as per table 300-3	cum	1.350	1283.19	1732.31	M-012
			c) GST @ 12 % on (a+b)				264.53	
			d) Overhead charges @ 10 % on (a+b+c)				246.89	
			e) Contractor's profit @ 10 % on (a+b+c+d)				271.58	
			f) Cess @ 1% on (a+b+c+d+e)				29.87	
			Cost for 10 metres = a+b+c+d+e+f				3017.26	
			Rate per metre = (a+b+c+d+e+f)/10				301.73	
						say	***302.00***	
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	60.00	90.00	Item No. 3.13
			b) RCC work M-20	cum	0.500	8793.00	4396.50	Item 12.8 (C) RCC
			Rate per metre = (a+b) (Including GST,OH,CP &Cess)				4486.50	
			Rates for these items may be taken from chapters on earth work and substructures respectively.			***say***	***4487.00***	
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	354.00	99.12	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			Mazdoor skilled	day	1.000	442.00	442.00	L-15
			b) Machinery					
			Smooth 3 wheeled steel roller 8-10 tonnes	hour	3.000	561.95	1685.85	P&M-044
			Water tanker 6 KL, one trip per hour	hour	3.000	544.25	1632.75	P&M-060
			c) Material					
			Cost of water	KL	18.000	67.26	1210.68	M-189
			d) GST @ 12 % on (a+b+c)				831.65	
			e) Overhead charges @ 10 % on (a+b+c+d)				776.21	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				853.83	
			g) Cess @ 1% on (a+b+c+d+e+f)				93.92	
			Cost for 3500 sqm = a+b+c+d+e+f+g				9486.01	
			Rate per sqm = (a+b+c+d+e+f+g)/3500				2.71	
						say	***3.00***	
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	354.00	14.16	L-12
			Mazdoor	day	1.500	310.00	465.00	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	4237.17	2118.59	P&M-014
			Three wheel 80-100 kN Statis Roller	hour	1.000	733.63	733.63	P&M-059
			Water tanker 6 KL, one trip per hour	hour	2.000	544.25	1088.50	P&M-060
			c) Material					
			Cost of water	KL	12.000	67.26	807.12	M-189
			d) GST @ 12 % on (a+b+c)				627.24	
			e) Overhead charges @ 10 % on (a+b+c+d)				585.42	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				643.97	
			g) Cess @ 1% on (a+b+c+d+e+f)				70.84	
			Cost for 100 cum = a+b+c+d+e+f+g				7154.47	
			Rate per cum = (a+b+c+d+e+f+g)/100				71.54	
						say	***72.00***	
		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	(i)	**Excavation in Hill Area in Soil by Mechanical Means (Dipositing of excavated earth with all lifts and lead upto 1000 m** 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	354.00	84.96	L-12
			Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Dozer D-50 @ 43.28 cum per hour	hour	6.000	2934.51	17607.06	P&M-014
			Front end loader	hour	6.000	1398.23	8389.38	P&M-017

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			Tipper 5.5cum capacity, 4 trips per hour.	hour	12.000	779.65	9355.80	P&M-048
			c) GST @ 12 % on (a+b)				4475.66	
			d) Overhead charges @ 10 % on (a+b+c)				4177.29	
			e) Contractor's profit @ 10 % on (a+b+c+d)				4595.02	
			f) Cess @ 1% on (a+b+c+d+e)				505.45	
			Cost for 260 cum = a+b+c+d+e+f				51050.62	
			Rate per cum = (a+b+c+d+e+f)/260				196.35	
						say	***196.00***	
		(ii)	**Depositing of excavated earth on the barren valley side.**					
			Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth on the Barren Valley side.					
			Unit = cum					
			Taking output = 260 cum					
			a) Labour					
			Mate	day	0.240	354.00	84.96	L-12
			Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Dozer D-50 @ 43.28 cum per hour	hour	6.000	2934.51	17607.06	P&M-014
			c) GST @ 12 % on (a+b)				2346.24	
			d) Overhead charges @ 10 % on (a+b+c)				2189.83	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2408.81	
			f) Cess @ 1% on (a+b+c+d+e)				264.97	
			Cost for 260 cum = a+b+c+d+e+f				26761.87	
			Rate per cum = (a+b+c+d+e+f)/260				102.93	
						say	***103.00***	
3.33	301	(i)	**Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting (Disposal of cut material with all lift and lead upto 1000m)**					
			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	354.00	113.28	L-12
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Machinery					
			Dozer D-50 @ 28.32 cum per hour	hour	6.000	2934.51	17607.06	P&M-014
			Front end loader	hour	7.000	1398.23	9787.61	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	779.65	5457.55	P&M-048
			c) GST @ 12 % on (a+b)				4253.46	
			d) Overhead charges @ 10 % on (a+b+c)				3969.90	
			e) Contractor's profit @ 10 % on (a+b+c+d)				4366.89	
			f) Cess @ 1% on (a+b+c+d+e)				480.36	
			Cost for 170 cum = a+b+c+d+e+f				48516.11	
			Rate per cum = (a+b+c+d+e+f)/170				285.39	
						say	***285.00***	
		(ii)	**Disposal of excavated earth on the barren valley side.**					
			Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of excavated earth on the barren valley side.					
			Unit = cum					
			Taking output = 170 cum					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.320	354.00	113.28	L-12
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Machinery					
			Dozer D-50 @ 28.32 cum per hour	hour	6.000	2934.51	17607.06	P&M-014
			c) GST @ 12 % on (a+b)				2424.04	
			d) Overhead charges @ 10 % on (a+b+c)				2262.44	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2488.68	
			f) Cess @ 1% on (a+b+c+d+e)				273.76	
			Cost for 170 cum = a+b+c+d+e+f				27649.26	
			Rate per cum = (a+b+c+d+e+f)/170				162.64	
						say	***163.00***	
3.34	301	(i)	**Excavation in Hilly Areas in Hard Rock Requiring Blasting (Disposal of cut material with all lift and lead upto 1000 m).**					
			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	354.00	173.46	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			b) Machinery					
			Dozer D-50 @ 28.32 cum per hour	hour	6.000	2934.51	17607.06	P&M-014
			Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	575.22	2876.10	P&M-001
			Front end loader	hour	7.000	1398.23	9787.61	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	779.65	5457.55	P&M-048
			c) Materials					
			Gelatine 80 per cent	kg	35.000	164.60	5761.00	M-104
			Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	140.000	11.04	1545.60	M-094 /100
			d) GST @ 12 % on (a+b+c)				5652.59	
			e) Overhead charges @ 10 % on (a+b+c+d)				5275.75	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				5803.32	
			g) Cess @ 1% on (a+b+c+d+e+f)				638.37	
			Cost for 170 cum = a+b+c+d+e+f+g				64474.91	
			Rate per cum = (a+b+c+d+e+f+g)/170				379.26	
						say	***379.00***	
		(ii)	**Disposal of excavated earth on the barren valley side.**					
			Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of excavated earth on the barren valley side.					
			Unit = cum					
			Taking output = 170 cum					
			a) Labour					
			Mate	day	0.490	354.00	173.46	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			b) Machinery					
			Dozer D-50 @ 28.32 cum per hour	hour	6.000	2934.51	17607.06	P&M-014

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	575.22	2876.10	P&M-001
			c) Materials					
			Gelatine 80 per cent	kg	35.000	164.60	5761.00	M-104
			Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	140.000	11.04	1545.60	M-094 /100
			d) GST @ 12 % on (a+b+c)				3823.17	
			e) Overhead charges @ 10 % on (a+b+c+d)				3568.29	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3925.12	
			g) Cess @ 1% on (a+b+c+d+e+f)				431.76	
			Cost for 170 cum = a+b+c+d+e+f+g				43608.06	
			Rate per cum = (a+b+c+d+e+f+g)/170				256.52	
						say	***257.00***	
3.35	1600 & 300	(i)	**Excavation in Hilly Areas in Soil by Manual Means**					
		(A)	Excavation in soil in Hilly Area by Manual Means including cutting and trimming of side slopes and disposing of excavated earth with a lift upto 1.5 m and a lead upto 20 m as per drawing and Technical Specification Clause 1603.1					
			Unit = Cum					
			Taking output = 120 cum.					
			a) Labour					
			Mate	day	2.400	354.00	849.60	L-12
			Mazdoor (Unskilled)	day	60.000	310.00	18600.00	L-13
			b) GST @ 12 % on (a)				2333.95	
			c) Overhead charges @ 10 % on (a+b)				2178.36	
			d) Contractor's profit @ 10 % on (a+b+c)				2396.19	
			e) Cess @ 1% on (a+b+c+d)				263.58	
			Cost for 120 cum = a+b+c+d+e				26621.68	
			Rate per cum = (a+b+c+d+e)/120				221.85	
						say	***222.00***	
		(B)	Deduct for quantum of earthwork of all types disposal directly by throwing into the valley without involving any lead and lift.					
			Ordinary and Hard Soil/Hard Shale, Soil containing shingle or small size boulders.					
			Unit = Cum					
			Taking output = 1 cum.					
			a) Labour					
			Mazdoor (Unskilled)	day	0.200	310.00	62.00	L-13
			b) GST @ 12 % on (a)				7.44	
			c) Overhead charges @ 10 % on (a+b)				6.94	
			d) Contractor's profit @ 10 % on (a+b+c)				7.64	
			e) Cess @ 1% on (a+b+c+d)				0.84	
			Cost for 1 cum = a+b+c+d+e				84.86	
			Rate per cum = (a+b+c+d+e)/1				84.86	
						say	***85.00***	
		(ii)	**Excavation in Hilly Area in Ordinary Rock by Manual Means**					
		(A)	Excavation in Ordinary Rock using Manual Means including loading in a truck and carrying of excavated material to embankment site with a lift upto 1.5 m and lead upto 20 m as per Clause 1603.2.					
			Unit = Cum					
			Taking output = 120 cum.					
			a) Labour					
			Mate	day	5.280	354.00	1869.12	L-12
			Mazdoor (Unskilled)	day	132.000	310.00	40920.00	L-13
			b) GST @ 12 % on (a)				5134.69	
			c) Overhead charges @ 10 % on (a+b)				4792.38	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
			d) Contractor's profit @ 10 % on (a+b+c)				5271.62	
			e) Cess @ 1% on (a+b+c+d)				579.88	
			Cost for 120 cum = a+b+c+d+e				58567.69	
			Rate per cum = (a+b+c+d+e)/120				488.06	
						say	***488.00***	
		(B)	Deduct for quantum of earthwork of all types disposal directly by throwing into the valley without involving any lead and lift. Ordinary and Hard Rock					
			Unit = Cum					
			Taking output = 1 cum.					
			a) Labour					
			Mazdoor (Unskilled)	day	0.320	310.00	99.20	L-13
			b) GST @ 12 % on (a)				11.90	
			c) Overhead charges @ 10 % on (a+b)				11.11	
			d) Contractor's profit @ 10 % on (a+b+c)				12.22	
			e) Cess @ 1% on (a+b+c+d)				1.34	
			Cost for 1 cum = a+b+c+d+e				135.77	
			Rate per cum = (a+b+c+d+e)/1				135.77	
						say	***136.00***	

Chapter – 4

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

Preamble:

1 Quantities of materials provided are approximate and are meant for the purpose of estimating only. Actual quantities shall be as per mix design.

2 For construction of sub-base, two alternatives as under have been provided.

a. Mix in place method

b. Plant mix method

3 Construction of shoulders: - Earthen, Hard and Paved shoulders have been considered, the rates applicable are for subgrade, sub-base and different layers of pavement respectively.

4 In the case of improvement of subgrade with lime stabilization, soil is assumed to be available at the site and has not been provided for. Only lime has been catered. In the case of lime stabilization of sub-base, soil has been provided to form the sub-base.

5 While providing for the rate of materials, detailed local enquires should be made and prevailing market rates ascertained from concerned suppliers in the area keeping in view the location of crushing plants and lead involved.

6 The quantities considered in the output are the compacted quantities. The quantities of aggregates provided in the rate analysis under the head material are the uncompacted quantities.

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in 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	354.00	141.60	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Machinery					
			Wet mix plant @ 75 tonne capacity per hour	hour	6.000	1619.47	9716.82	P&M-093
			Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018
			Water tanker 6 KL capacity 5 km lead with one trip per hour	hour	4.500	544.25	2449.13	P&M-060
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover loading and unloading				0.00	
			Motor Grader 110 HP	hour	6.000	2917.70	17506.20	P&M-032
			Vibratory roller 8-10 t	hour	6.000	733.63	4401.78	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	892.04	128453.76	M-013
			9.5 mm to 2.36 mm @ 20 per cent (graded)	cum	57.000	757.52	43178.64	M-017
			2.36 mm below @ 30 per cent	cum	86.400	601.77	51992.93	M-020
			Cost of water	KL	27.000	67.26	1816.02	M-189
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	100.800	724.78	73057.82	M-015
			9.5 mm to 2.36 mm @ 25 per cent (graded)	cum	72.000	757.52	54541.44	M-017
			2.36 mm below @ 40 per cent	cum	115.200	601.77	69323.90	M-020
			Cost of water	KL	27.000	67.26	1816.02	M-189
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	100.800	780.53	78677.42	M-016
			4.75 mm to 2.36 mm @ 12.5 per	cum	36.000	669.03	24085.08	M-018
			2.36 mm below @ 52.5 per cent	cum	151.200	601.77	90987.62	M-020
			Cost of water	KL	27.000	67.26	1816.02	M-189
4.1A		(i)	**Rate per cum for grading-I Material**					
			d) GST @ 12 % on (a+b+c)				33291.78	
			e) Overhead charges @ 10 % on (a+b+c+d)				31072.33	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				34179.56	
			g) Cess @ 1% on (a+b+c+d+e+f)				3759.75	
			Cost for 225 cum = a+b+c+d+e+f+g				379734.92	
			Rate per cum = (a+b+c+d+e+f+g)/225				1687.71	
						say	***1688.00***	

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
4.1A		(ii)	**Rate per cum for grading-II Material**					
			d) GST @ 12 % on (a+b+c)				30087.52	
			e) Overhead charges @ 10 % on (a+b+c+d)				28081.69	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				30889.85	
			g) Cess @ 1% on (a+b+c+d+e+f)				3397.88	
			Cost for 225 cum = a+b+c+d+e+f+g				343186.27	
			Rate per cum = (a+b+c+d+e+f+g)/225				1525.27	
						say	***1525.00***	
4.1A		(iii)	**Rate per cum for grading-III Material**					
			d) GST @ 12 % on (a+b+c)				29706.75	
			e) Overhead charges @ 10 % on (a+b+c+d)				27726.30	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				30498.93	
			g) Cess @ 1% on (a+b+c+d+e+f)				3354.88	
			Cost for 225 cum = a+b+c+d+e+f+g				338843.15	
			Rate per cum = (a+b+c+d+e+f+g)/225				1505.97	
						say	***1506.00***	
		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	354.00	169.92	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor unskilled	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Motor Grader 110 HP @ 50 cum	hour	6.000	2917.70	17506.20	P&M-032
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Tractor - Rotavator	hour	12.000	407.96	4895.52	P&M-054
			Water tanker 6 KL capacity	hour	3.000	544.25	1632.75	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	892.04	171271.68	M-013
			9.5 mm to 2.36 mm @ 20 per cent	cum	76.000	757.52	57571.52	M-017
			2.36 mm below @ 30 per cent	cum	115.200	601.77	69323.90	M-020
			Cost of water	KL	18.000	67.26	1210.68	M-189
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	134.400	724.78	97410.43	M-015
			9.5 mm to 2.36 mm @ 25 per cent	cum	96.000	757.52	72721.92	M-017
			2.36 mm below @ 40 per cent	cum	153.600	601.77	92431.87	M-020
			Cost of water	KL	18.000	67.26	1210.68	M-189
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	134.400	780.53	104903.23	M-016
			4.75 mm to 2.36 mm @ 12.5 per	cum	48.000	669.03	32113.44	M-018
			2.36 mm below @ 52.5 per cent	cum	201.600	601.77	121316.83	M-020
			Cost of water	KL	18.000	67.26	1210.68	M-189
4.1B		(i)	**Rate per cum for grading-I Material**					
			d) GST @ 12 % on (a+b+c)				39836.15	

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			e) Overhead charges @ 10 % on (a+b+c+d)				37180.41	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				40898.45	
			g) Cess @ 1% on (a+b+c+d+e+f)				4498.83	
			Cost for 300 cum = a+b+c+d+e+f+g				454381.79	
			Rate per cum = (a+b+c+d+e+f+g)/300				1514.61	
						say	***1515.00***	
4.1B		**(ii)**	**Rate per cum for grading-II Material**					
			d) GST @ 12 % on (a+b+c)				35563.81	
			e) Overhead charges @ 10 % on (a+b+c+d)				33192.89	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				36512.18	
			g) Cess @ 1% on (a+b+c+d+e+f)				4016.34	
			Cost for 300 cum = a+b+c+d+e+f+g				405650.29	
			Rate per cum = (a+b+c+d+e+f+g)/300				1352.17	
						say	***1352.00***	
4.1B		**(iii)**	**Rate per cum for grading-III Material**					
			d) GST @ 12 % on (a+b+c)				35056.12	
			e) Overhead charges @ 10 % on (a+b+c+d)				32719.05	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				35990.95	
			g) Cess @ 1% on (a+b+c+d+e+f)				3959.00	
			Cost for 300 cum = a+b+c+d+e+f+g				399859.47	
			Rate per cum = (a+b+c+d+e+f+g)/300				1332.86	
						say	***1333.00***	
		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	354.00	141.60	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Machinery					
			Mortar Grader 110 HP @ 50 cum per hour	hour	6.000	2917.70	17506.20	P&M-032
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Water tanker 6 KL capacity	hour	3.000	544.25	1632.75	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	947.79	127382.98	M-029
			26.5 mm to 4.75 mm @ 45 per cent	cum	172.800	780.53	134875.58	M-026
			2.36 mm below @ 20 per cent (Coarse Sand)	cum	76.800	624.78	47983.10	M-022
			Cost of water	KL	18.000	67.26	1210.68	M-189
			OR					
			For Grading-II Material					
			26.5 mm to 4.75 mm @ 75 per cent	cum	288.000	780.53	224792.64	M-026
			2.36 mm below @ 25 per cent	cum	96.000	624.78	59978.88	M-022
			Cost of water	KL	18.000	67.26	1210.68	M-189
			OR					

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 66 per cent	cum	255.000	724.78	184818.90	M-025
			2.36 mm below @ 34 per cent	cum	129.000	624.78	80596.62	M-022
			Cost of water	KL	18.000	67.26	1210.68	M-189
4.2		(i)	**Rate per cum for grading-I Material**					
			d) GST @ 12 % on (a+b+c)				40619.84	
			e) Overhead charges @ 10 % on (a+b+c+d)				37911.85	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				41703.04	
			g) Cess @ 1% on (a+b+c+d+e+f)				4587.33	
			Cost for 300 cum = a+b+c+d+e+f+g				463320.73	
			Rate per cum = (a+b+c+d+e+f+g)/300				1544.40	
						say	***1544.00***	
4.2		(ii)	**Rate per cum for grading-II Material**					
			d) GST @ 12 % on (a+b+c)				37563.42	
			e) Overhead charges @ 10 % on (a+b+c+d)				35059.20	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				38565.12	
			g) Cess @ 1% on (a+b+c+d+e+f)				4242.16	
			Cost for 300 cum = a+b+c+d+e+f+g				428458.43	
			Rate per cum = (a+b+c+d+e+f+g)/300				1428.19	
						say	***1428.00***	
4.2		(iii)	**Rate per cum for grading-III Material**					
			d) GST @ 12 % on (a+b+c)				35240.70	
			e) Overhead charges @ 10 % on (a+b+c+d)				32891.32	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				36180.46	
			g) Cess @ 1% on (a+b+c+d+e+f)				3979.85	
			Cost for 300 cum = a+b+c+d+e+f+g				401964.86	
			Rate per cum = (a+b+c+d+e+f+g)/300				1339.88	
						say	***1340.00***	
		Note	Any one of the grading for material may be adopted as per design					
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	354.00	127.44	L-12
			Skilled mazdoor for alignment and geometrics	day	1.000	442.00	442.00	L-15
			Mazdoor for spraying lime	day	8.000	310.00	2480.00	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	420.35	5044.20	P&M-055
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2917.70	17506.20	P&M-032
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	733.63	2861.16	P&M-059
			Water tanker 6 KL capacity	hour	12.000	544.25	6531.00	P&M-060
			c) Material					
			Lime at site	tonne	15.750	12878.76	202840.47	M-188
			Cost of water	KL	72.000	67.26	4842.72	M-189
			d) GST @ 12 % on (a+b+c)				29121.02	

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			e) Overhead charges @ 10 % on (a+b+c+d)				27179.62	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				29897.58	
			g) Cess @ 1% on (a+b+c+d+e+f)				3288.73	
			Cost for 300 cum = a+b+c+d+e+f+g				332162.14	
			Rate per cum = (a+b+c+d+e+f+g)/300				1107.21	
						say	***1107.00***	
		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	354.00	509.76	L-12
			Mazdoor skilled	day	1.000	442.00	442.00	L-15
			Mazdoor	day	35.000	310.00	10850.00	L-13
			b) Machinery					
			Three wheel 80-100 kN Static Roller	hour	2.500	733.63	1834.08	P&M-059
			Water tanker 6 KL capacity	hour	6.000	544.25	3265.50	P&M-060
			c) Material					
			Lime at site	tonne	8.000	12878.76	103030.08	M-188
			Cost of water	KL	36.000	67.26	2421.36	M-189
			d) GST @ 12 % on (a+b+c)				14682.33	
			e) Overhead charges @ 10 % on (a+b+c+d)				13703.51	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				15073.86	
			g) Cess @ 1% on (a+b+c+d+e+f)				1658.12	
			Cost for 150 cum= a+b+c+d+e+f+g				167470.60	
			Rate per cum =(a+b+c+d+e+f+g)/150				1116.47	
						say	***1116.00***	
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	354.00	169.92	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Excavator 1.00 cum bucket capacity	hour	6.000	1751.33	10507.98	P&M-026
			Tipper for carriage of soil	tonne. km	525 x L	7.65	12048.75	Lead =3 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				1204.88	
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2917.70	17506.20	P&M-032
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	407.96	4895.52	P&M-054
			Water tanker 6 KL capacity	hour	12.000	544.25	6531.00	P&M-060

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			c) Material					
			Lime at site	tonne	15.750	12878.76	202840.47	M-188
			Cost of water	KL	72.000	67.26	4842.72	M-189
			d) GST @ 12 % on (a+b+c)				32271.99	
			e) Overhead charges @ 10 % on (a+b+c+d)				30120.52	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				33132.57	
			g) Cess @ 1% on (a+b+c+d+e+f)				3644.58	
			Cost for 300 cum = a+b+c+d+e+f+g				368102.88	
			Rate per cum= (a+b+c+d+e+f+g)/300				1227.01	
						say	***1227.00***	
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	354.00	169.92	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Excavator 1.00 cum bucket capacity	hour	6.000	1751.33	10507.98	P&M-026
			Tipper for carriage of soil	tonne.km	525 x L	7.65	12048.75	Lead =3 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				1204.88	
			10.75	hour	6.000	2917.70	17506.20	P&M-032
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	407.96	4895.52	P&M-054
			Water tanker 6 KL capacity	hour	12.000	544.25	6531.00	P&M-060
			c) Material					
			Cement at site (@ 4 per cent of 525 tonne)	tonne	21.000	9053.98	190133.58	M-081
			Cost of water	KL	72.000	67.26	4842.72	M-189
			d) GST @ 12 % on (a+b+c)				30747.16	
			e) Overhead charges @ 10 % on (a+b+c+d)				28697.35	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				31567.08	
			g) Cess @ 1% on (a+b+c+d+e+f)				3472.38	
			Cost for 300 cum = a+b+c+d+e+f+g				350710.30	
			Rate per cum= (a+b+c+d+e+f+g)/300				1169.03	
						say	***1169.00***	
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	354.00	325.68	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	21.000	310.00	6510.00	L-13
			b) Machinery					
			Motor Grader 110 HP	hour	6.000	2917.70	17506.20	P&M-032

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Water tanker 6 KL capacity	hour	18.000	544.25	9796.50	P&M-060
			c) Material					
			Screening type 'B' or coarse sand	cum	720.000	601.77	433274.40	M-004
			Cost of water	KL	108.000	67.26	7264.08	M-189
			c) GST @ 12 % on (a+b)				57595.52	
			d) Overhead charges @ 10 % on (a+b+c)				53755.82	
			e) Contractor's profit @ 10 % on (a+b+c+d)				59131.40	
			f) Cess @ 1% on (a+b+c+d+e)				6504.45	
			Cost for 600 cum = a+b+c+d+e				656949.83	
			Rate per cum = (a+b+c+d+e)/600				1094.92	
						say	***1095.00***	
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	354.00	3568.32	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	250.000	310.00	77500.00	L-13
			b) Machinery					
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hour	hour	12.000			
			Water tanker 6 KL capacity	hour	24.000	544.25	13062.00	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	871.68	379703.81	M-039
			Stone Screening					
			Type A 13.2 mm for **grading-I** @ 0.27 cum per 10 sqm	cum	97.200	1895.58	184250.38	M-052
			OR					
			Crushable type such as Moorum or Gravel for **grading-I** @ 0.30 cum per 10 sqm	cum	108.000	278.76	30106.08	M-007
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	278.76	8028.29	M-007
			Cost of water	KL	144.000	67.26	9685.44	M-189
4.9A (i)		**(a)**	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) GST @ 12 % on (a+b+c)				62269.37	
			e) Overhead charges @ 10 % on (a+b+c+d)				58118.08	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				63929.89	
			g) Cess @ 1% on (a+b+c+d+e+f)				7032.29	
			Cost for 360 cum = a+b+c+d+e+f+g				710261.06	
			Rate per cum = (a+b+c+d+e+f+g)/360				1972.95	
						say	***1973.00***	
			OR					

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
4.9A (i)		**(b)**	**Using Scrining Type-A (13.2mm agg.)**					
			d) GST @ 12 % on (a+b+c)				81730.08	
			e) Overhead charges @ 10 % on (a+b+c+d)				76281.41	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				83909.55	
			g) Cess @ 1% on (a+b+c+d+e+f)				9230.05	
			Cost for 360 cum = a+b+c+d+e+f+g				932235.11	
			Rate per cum = (a+b+c+d+e+f+g)/360				2589.54	
						say	***2590.00***	
4.9A		**(ii)**	**Grading-II**					
			a) 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	896.46	390497.98	M-038
			b) Stone Screening					
			Type A 13.2 mm for grading-II@ 0.12 cum per 10 sqm	cum	57.600	1895.58	109185.41	M-052
			OR					
			Crushable type such as Moorum or Gravel for **grading II &III** @ 0.22 cum per 10 sqm	cum	105.590	278.76	29434.27	M-007
			OR					
			Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1951.33	168594.91	M-051
			c) Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	278.76	8028.29	M-007
			Cost of water	KL	144.000	67.26	9685.44	M-189
4.9A (ii)		**(a)**	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) GST @ 12 % on (a+b+c)				63484.05	
			e) Overhead charges @ 10 % on (a+b+c+d)				59251.78	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				65176.96	
			g) Cess @ 1% on (a+b+c+d+e+f)				7169.47	
			Cost for 360 cum = a+b+c+d+e+f+g				724116.05	
			Rate per cum = (a+b+c+d+e+f+g)/360				2011.43	
						say	***2011.00***	
			OR					
4.9A (ii)		**(b)**	**Using Scrining Type-A (13.2mm agg.)**					
			d) GST @ 12 % on (a+b+c)				74017.59	
			e) Overhead charges @ 10 % on (a+b+c+d)				69083.08	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				75991.39	
			g) Cess @ 1% on (a+b+c+d+e+f)				8359.05	
			Cost for 360 cum = a+b+c+d+e+f+g				844264.33	
			Rate per cum = (a+b+c+d+e+f+g)/360				2345.18	
						say	***2345.00***	
4.9A (ii)		**(c)**	**Using Scrining Type-B (11.2mm agg.)**					
			d) GST @ 12 % on (a+b+c)				81146.73	
			e) Overhead charges @ 10 % on (a+b+c+d)				75736.95	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				83310.64	
			g) Cess @ 1% on (a+b+c+d+e+f)				9164.17	
			Cost for 360 cum = a+b+c+d+e+f+g				925581.21	
			Rate per cum = (a+b+c+d+e+f+g)/360				2571.06	
						say	***2571.00***	

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
4.9A		(iii)	**c)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	921.24	401292.14	M-036
			Stone Screening					
			Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1951.33	168594.91	M-051
			OR					
			Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	278.76	29434.27	M-007
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	278.76	8028.29	M-007
			Cost of water	KL	144.000	67.26	9685.44	M-189
4.9A (iii)		(a)	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) GST @ 12 % on (a+b+c)				64779.35	
			e) Overhead charges @ 10 % on (a+b+c+d)				60460.73	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				66506.80	
			g) Cess @ 1% on (a+b+c+d+e+f)				7280.07	
			Cost for 360 cum = a+b+c+d+e+f+g				738854.90	
			Rate per cum = (a+b+c+d+e+f+g)/360				2052.37	
						say	***2052.00***	
			OR					
4.9A (iii)		(b)	**Using Scrining Type-B (11.2mm agg.)**					
			d) GST @ 12 % on (a+b+c)				82442.03	
			e) Overhead charges @ 10 % on (a+b+c+d)				76945.89	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				84640.48	
			g) Cess @ 1% on (a+b+c+d+e+f)				9310.45	
			Cost for 360 cum = a+b+c+d+e+f+g				940355.73	
			Rate per cum = (a+b+c+d+e+f+g)/360				2612.10	
						say	***2612.00***	
			(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	354.00	240.72	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	15.000	310.00	4650.00	L-13
			b) Machinery					
			Motor grader 110 HP @ 50cum/hr. for spreading	hour	7.200	2917.70	21007.44	P&M-032
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
			Water tanker 6 KL capacity	hour	24.000	544.25	13062.00	P&M-060
			c) Material (Refer table 400 - 7, 8 & 9)					
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	871.68	379703.81	M-039

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Stone Screening					
			Type A 13.2 mm for **grading-I** @ 0.27 cum per 10 sqm	cum	97.200	1895.58	184250.38	M-052
			OR					
			Crushable type such as Moorum or Gravel for **grading-I** @ 0.30 cum per 10 sqm	cum	108.000	278.76	30106.08	M-007
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	278.76	8028.29	M-007
			Cost of water	KL	144.000	67.26	9685.44	M-189
4.9B (i)		(a)	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) GST @ 12 % on (a+b+c)				55648.95	
			e) Overhead charges @ 10 % on (a+b+c+d)				51939.02	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				57132.92	
			g) Cess @ 1% on (a+b+c+d+e+f)				6284.62	
			Cost for 360 cum = a+b+c+d+e+f+g				634746.78	
			Rate per cum = (a+b+c+d+e+f+g)/360				1763.19	
						say	***1763.00***	
			OR					
4.9B (i)		(b)	**Using Scrining Type-A (13.2mm agg.)**					
			d) GST @ 12 % on (a+b+c)				75109.66	
			e) Overhead charges @ 10 % on (a+b+c+d)				70102.35	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				77112.59	
			g) Cess @ 1% on (a+b+c+d+e+f)				8479.98	
			Cost for 360 cum = a+b+c+d+e+f+g				856718.44	
			Rate per cum = (a+b+c+d+e+f+g)/360				2379.77	
						say	***2380.00***	
4.9B		(ii)	**c) 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	896.46	390497.98	M-038
			Stone Screening					
			Type A 13.2 mm for grading-II@ 0.12 cum per 10 sqm	cum	57.600	1895.58	109185.41	M-052
			OR					
			Crushable type such as Moorum or Gravel for **grading II &III** @ 0.22 cum per 10 sqm	cum	105.590	278.76	29434.27	M-007
			OR					
			Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1951.33	168594.91	M-051
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	278.76	8028.29	M-007
			Cost of water	KL	144.000	67.26	9685.44	M-189
4.9B (ii)		(a)	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) GST @ 12 % on (a+b+c)				56863.64	
			e) Overhead charges @ 10 % on (a+b+c+d)				53072.73	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				58380.00	
			g) Cess @ 1% on (a+b+c+d+e+f)				6421.80	
			Cost for 360 cum = a+b+c+d+e+f+g				648601.80	
			Rate per cum = (a+b+c+d+e+f+g)/360				1801.67	
						say	***1802.00***	

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			OR					
4.9B (ii)		**(b)**	**Using Scrining Type-A (13.2mm agg.)**					
			d) GST @ 12 % on (a+b+c)				67397.17	
			e) Overhead charges @ 10 % on (a+b+c+d)				62904.02	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				69194.43	
			g) Cess @ 1% on (a+b+c+d+e+f)				7608.98	
			Cost for 360 cum = a+b+c+d+e+f+g				768747.66	
			Rate per cum = (a+b+c+d+e+f+g)/360				2135.41	
						say	***2135.00***	
4.9B (ii)		**(c)**	**Using Scrining Type-B (11.2mm agg.)**					
			d) GST @ 12 % on (a+b+c)				74526.31	
			e) Overhead charges @ 10 % on (a+b+c+d)				69557.89	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				76513.68	
			g) Cess @ 1% on (a+b+c+d+e+f)				8416.50	
			Cost for 360 cum = a+b+c+d+e+f+g				850066.94	
			Rate per cum = (a+b+c+d+e+f+g)/360				2361.30	
						say	***2361.00***	
4.9B		**(iii)**	**c)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	921.24	401292.14	M-036
			Stone Screening					
			Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1951.33	168594.91	M-051
			OR					
			Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	278.76	29434.27	M-007
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	278.76	8028.29	M-007
			Cost of water	KL	144.000	67.26	9685.44	M-189
4.9B (iii)		**(a)**	**Using Scrining Crushable type such as Moorum or Gravel**					
			d) GST @ 12 % on (a+b+c)				58158.93	
			e) Overhead charges @ 10 % on (a+b+c+d)				54281.67	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				59709.84	
			g) Cess @ 1% on (a+b+c+d+e+f)				6568.08	
			Cost for 360 cum = a+b+c+d+e+f+g				663376.31	
			Rate per cum = (a+b+c+d+e+f+g)/360				1842.71	
						say	***1843.00***	
			OR					
4.9B (iii)		**(b)**	**Using Scrining Type-B (11.2mm agg.)**					
			d) GST @ 12 % on (a+b+c)				75821.61	
			e) Overhead charges @ 10 % on (a+b+c+d)				70766.83	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				77843.52	
			g) Cess @ 1% on (a+b+c+d+e+f)				8562.79	
			Cost for 360 cum = a+b+c+d+e+f+g				864841.47	
			Rate per cum = (a+b+c+d+e+f+g)/360				2402.34	
						say	***2402.00***	

Note As three wheeled smooth rollers are also very commonly used, the same has been provided as an alternative.

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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	354.00	1472.64	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor for crushing broken cement concrete pavement/slabs into aggregate	day	102.000	310.00	31620.00	L-13
			b) Machinery					
			Motor Grader,110 HP @ 50 cum/hr.	hour	6.000	2917.70	17506.20	P&M-032
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	720 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Water tanker 6 KL capacity with 5 km lead @ 1 trip per hour	hour	12.000	544.25	6531.00	P&M-060
			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	67.26	4842.72	M-189
			d) GST @ 12 % on (a+b+c)				9077.73	
			e) Overhead charges @ 10 % on (a+b+c+d)				8472.55	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				9319.80	
			g) Cess @ 1% on (a+b+c+d+e+f)				1025.18	
			Cost for 360 cum = a+b+c+d+e+f+g				103542.98	
			Rate per cum = (a+b+c+d+e+f+g)/360				287.62	
						say	***288.00***	

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

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Taking output = 7500 sqm					
			a) Labour					
			Mate	day	0.560	354.00	198.24	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	12.000	310.00	3720.00	L-13
			b) Machinery					
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031
			Hydraulic self propelled chips spreader	hour	6.000	3211.50	19269.00	P&M-025
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	hour	6.000	779.65	4677.90	P&M-048
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	733.63	2861.16	P&M-059
			Bitumen pressure distributor @ 1750 sqm per hour	hour	4.280	1308.85	5601.88	P&M-004
			c) Material					
			Crushed stone aggregate 11.2 mm size	cum	97.500	1951.33	190254.68	M-051
			Bitumen (80-100 grade)	tonne	0.250	57350.44	14337.61	M-074
			d) GST @ 12 % on (a+b+c)				30335.48	
			e) Overhead charges @ 10 % on (a+b+c+d)				28313.11	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				31144.42	
			g) Cess @ 1% on (a+b+c+d+e+f)				3425.89	
			Cost for 7500 sqm = a+b+c+d+e+f+g				346014.53	
			Rate per sqm = (a+b+c+d+e+f+g)/7500				46.14	
						say	***46.00***	

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.

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	354.00	169.92	L-12
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Wet mix plant of 75 tonne hourly capacity	hour	9.000	1619.47	14575.23	P&M-094
			Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Paver finisher	hour	6.000	1187.61	7125.66	P&M-035
			Three wheel 80-100 kN Static Roller	hour	6x0.65	733.63	2861.16	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000			
			Water tanker 6 KL capacity	hour	3.000	544.25	1632.75	P&M-060
			Tipper	tonne. km	495 x L	7.65	0.00	Lead =0 km & P&M-058

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			c) Material (Table 400-11)					
			45 mm to 22.4 mm@ 30 per cent	cum	89.100	947.79	84448.09	M-034
			22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	976.11	115961.87	M-031
			2.36 mm to 75 micron@ 30 per cent	cum	89.100	624.78	55667.90	M-022
			Cost of water	KL	18.000	67.26	1210.68	M-189
			d) GST @ 12 % on (a+b+c)				36245.75	
			e) Overhead charges @ 10 % on (a+b+c+d)				33829.36	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				37212.30	
			g) Cess @ 1% on (a+b+c+d+e+f)				4093.35	
			Cost for 225 cum = a+b+c+d+e+f+g				413428.64	
			Rate per cum = (a+b+c+d+e+f+g)/225				1837.46	
						say	***1837.00***	

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..

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	354.00	84.96	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Water tanker 6 KL with 5 km lead and 1 trip per hour	hour	1.000	544.25	544.25	P&M-060
			Plate compactor @ 3.5 cum per hour	hour	6.000	338.05	2028.30	P&M-086
			c) Material					
			Cost of water	KL	6.000	67.26	403.56	M-189
			d) GST @ 12 % on (a+b+c)				590.53	
			e) Overhead charges @ 10 % on (a+b+c+d)				551.16	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				606.28	
			g) Cess @ 1% on (a+b+c+d+e+f)				66.69	
			Cost for 21 cum = a+b+c+d+e+f+g				6735.73	
			Rate per cum = (a+b+c+d+e+f+g)/21				320.75	
						say	***321.00***	

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.

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

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Unit = cum					
			Taking output = 21 cum					
			a) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mazdoor	day	4.000	310.00	1240.00	L-13
			b) Machinery					
			Water tanker with 5 km lead	hour	1.000	544.25	544.25	P&M-060
			Plate Compactor @ 3.5 cum per hour	hour	6.000	338.05	2028.30	P&M-086
			Hydraulic Excavator1.0 cum bucket capacity @60 cum per hour	hour	0.500	1751.33	875.67	P&M-026
			Tipper 10 tonne capacity	tonne. km	52.5 x L	7.65	1204.88	Lead =3 km & P&M-058
			Add 10 per cent of cost of transportation to cover cost of loading and unloading				120.49	
			c) Material					
			Cost of water	KL	6.000	67.26	403.56	M-189
			d) GST @ 12 % on (a+b+c)				776.85	
			e) Overhead charges @ 10 % on (a+b+c+d)				725.06	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				797.57	
			g) Cess @ 1% on (a+b+c+d+e+f)				87.73	
			Cost for 21 cum = a+b+c+d+e+f+g				8861.00	
			Rate per cum = (a+b+c+d+e+f+g)/ 21				421.95	
						say	***422.00***	

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.

4.17 410 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

Unit = cum

Taking output = 360 cum

A By Mix in Place Method

a) Labour						
Mate	day	0.480	354.00	169.92	L-12
Mazdoor skilled	day	2.000	442.00	884.00	L-15
Mazdoor	day	10.000	310.00	3100.00	L-13

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			b) Machinery					
			Tractor attached with rotavator @ 25 cum per hour	hour	12.000	407.96	4895.52	P&M-054
			Motor grader 110 HP	hour	6.000	2917.70	17506.20	P&M-032
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Water tanker 6 KL capacity	hour	6.000	544.25	3265.50	P&M-060
			c) Material					
			Aggregate at site					
			i) For 53 mm maximum size					
			63 mm to 45 mm @ 33 per cent	cum	157.460	896.46	141156.59	M-038
			22.5 mm to 5.6 mm@ 32 per cent	cum	151.060	1522.12	229931.45	M-032
			Below 5.6 mm @ 35 per cent	cum	166.680	1828.32	304744.38	M-030
			Cost of water	KL	36.000	67.26	2421.36	M-189
			Or					
			ii) For 45 mm maximum size					
			45 mm to 22.5 mm@ 5 per cent	cum	24.120	947.79	22860.69	M-034
			22.4 mm to 5.6 mm@ 50 per cent	cum	237.600	1522.12	361655.71	M-032
			Below 5.6 mm@ 45 per cent	cum	213.480	1828.32	390309.75	M-030
			Cost of water	KL	36.000	67.26	2421.36	M-189
4.17A		**(i)**	**For 53 mm maximum size**					
			d) GST @ 12 % on (a+b+c)				85497.20	
			e) Overhead charges @ 10 % on (a+b+c+d)				79797.39	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				87777.13	
			g) Cess @ 1% on (a+b+c+d+e+f)				9655.48	
			Cost for 360.0cum = a+b+c+d+e+f+g				975203.90	
			Rate per cum = (a+b+c+d+e+f+g)/360				2708.90	
			or			***say***	***2709.00***	
4.17A		**(ii)**	**For 45 mm maximum size**					
			d) GST @ 12 % on (a+b+c)				97376.45	
			e) Overhead charges @ 10 % on (a+b+c+d)				90884.69	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				99973.16	
			g) Cess @ 1% on (a+b+c+d+e+f)				10997.05	
			Cost for 360.0cum = a+b+c+d+e+f+g				1110701.78	
			Rate per cum = (a+b+c+d+e+f+g)/360				3085.28	
						say	***3085.00***	
		Note	Any one of the aggregate grading may be adopted					
4.17		**B**	**By Mixing Plant :**					
			Unit = cum					
			Taking output = 225 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.280	354.00	99.12	L-12
			Mazdoor skilled	day	1.000	442.00	442.00	L-15
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Wet mix plant @ 75 tonne per hour	hour	6.000	1619.47	9716.82	P&M-094
			Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Motor grader 110 HP	hour	6.000	2917.70	17506.20	P&M-032

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Water tanker 6 KL capacity	hour	3.000	544.25	1632.75	P&M-060
			Tipper 10 tonne capacity	tonne.km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			c) Material					
			Aggregate at site					
			i) For 53 mm maximum size					
			63 mm to 45 mm @ 33 per cent	cum	98.400	896.46	88211.66	M-038
			22.5 mm to 5.6 mm@ 32 per cent	cum	94.410	1522.12	143703.35	M-032
			Below 5.6 mm @ 35 per cent	cum	104.180	1828.32	190474.38	M-030
			Or					
			ii) For 45 mm maximum size					
			45 mm to 22.5 mm@ 5 per cent	cum	15.060	947.79	14273.72	M-034
			22.4 mm to 5.6 mm@ 50 per cent	cum	148.500	1522.12	226034.82	M-032
			Below 5.6 mm@ 45 per cent	cum	133.430	1828.32	243952.74	M-030
			Cost of water	KL	18.000	67.26	1210.68	M-189
4.17 B		(i)	**For 53 mm maximum size**					
			d) GST @ 12 % on (a+b+c)				56695.04	
			e) Overhead charges @ 10 % on (a+b+c+d)				52915.37	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				58206.91	
			g) Cess @ 1% on (a+b+c+d+e+f)				6402.76	
			Cost for 225cum = a+b+c+d+e+f+g				646678.76	
			Rate per cum = (a+b+c+d+e+f+g)/225				2874.13	
						say	***2874.00***	
4.17 B		(ii)	**For 45 mm maximum size**					
			d) GST @ 12 % on (a+b+c)				64264.95	
			e) Overhead charges @ 10 % on (a+b+c+d)				59980.62	
			f) Contractor's profit @ 10 % on (a+b+c+d+				65978.68	
			g) Cess @ 1% on (a+b+c+d+e+f)				7257.66	
			Cost for 360.0cum = a+b+c+d+e+f+g				733023.16	
			Rate per cum = (a+b+c+d+e+f+g)/360				2036.18	
						say	***2036.00***	
4.18			**Preparation of sub grade**					
		(A)	Preparation of sub grade by excavating earth to an average depth of 22.50 cm, dressing to camber and consolidating with road roller, making good the undulations etc. and disposal of surplus earth, lead upto 50 m.					
			Unit = Sq.m.					
			Taking output = 100 Sq.m.					
			a) Labour					
			Mate	day	1.800	354.00	637.20	L-12
			Mazdoor	day	18.000	310.00	5580.00	L-13
			Mazdoor for consolidation of sub-	day	0.270	310.00	83.70	L-13
			Mazdoor for watch & ward	day	0.054	310.00	16.74	L-13
			b) Machinery					
			Three wheel 80-100 kN Static Roller	hour	0.430	733.63	315.46	M-189
			c) GST @ 12 % on (a+b)				795.97	
			d) Overhead charges @ 10 % on (a+b+c)				742.91	

Sl. No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				817.20	
			f) Cess @ 1% on (a+b+c+d+e)				89.89	
			Cost for 100 Sq.m. = a+b+c+d+e+f				9079.07	
			Rate per Sq.m. = (a+b+c+d+e+f)/ 100				90.79	
						say	***91.00***	
		(B)	Consolidation of sub-grade with road roller of 8 to 12 tonne capacity including making good the undulations etc. with earth or quarry spoils etc. and rerolling the sub grade.					
			Unit = Sq.m.					
			Taking output = 100 Sq.m.					
			a) Labour					
			Mazdoor for watch & ward	day	0.054	310.00	16.74	L-13
			b) Machinery					
			Three wheel 80-100 kN Static Roller	hour	0.430	733.63	315.46	M-189
			c) GST @ 12 % on (a+b)				39.86	
			d) Overhead charges @ 10 % on (a+b+c)				37.21	
			e) Contractor's profit @ 10 % on (a+b+c+d)				40.93	
			f) Cess @ 1% on (a+b+c+d+e)				4.50	
			Cost for 100 Sq.m. = a+b+c+d+e+f				454.70	
			Rate per Sq.m. = (a+b+c+d+e+f)/ 100				4.55	
						say	***4.55***	

Chapter – 5

BASES AND SURFACE COURSES (BITUMINOUS)

Preamble:

1 Various alternatives for machines and materials have been provided. The one that suits a particular situation and design may be adopted.

2 The outputs considered for construction equipment are for compacted quantities of relevant items and not for loose quantities.

3 In case of prime coat and tack coat, average quantities of binder indicated in specifications have been taken.

4 Tack coat and prime coat wherever provided, are required to be measured and paid separately.

5 Cleaning of surface is a part of the item of prime coat and tack coat. As such cleaning of surface has not been provided for bituminous courses as the same is already catered in prime/tack coat. However, for those cases where such coats are not required to be done, cleaning of surface shall be included and paid.

6 Rolling of bituminous courses is required to be done as per Clause 501.6 of MORD Specifications. Provision in the analysis has been made accordingly. It has been observed during actual practice at work sites that the availability of road roller is generally inadequate. As compaction is the key to good construction, this point is being specifically highlighted to ensure that adequate number of road rollers as per provision in the rate analysis are deployed at site.

7 Spreading of bituminous materials shall be done by mechanical means except in areas where a mechanical paver cannot have access.

8 Hot Mazdoor is the one who work for Bitumen heating/spreading or spreading of hot bituminous mix. He will be paid the same wages. However, he will be provided safety kits containing normally gum boots, hand gloves, dark goggles, barnol, country soap, coconut oil, tarring outfits, etc. For this purpose, additional 0.5 per cent sundries have been provided in the analysis of rates in addition to the normal sundries covered by overheads.

9 Where the proposed aggregates fail to pass the stripping value test, an approved adhesion agent shall be added to the binder as per Clause 507.2.4 with the approval of the Engineer and cost of the adhesion agent shall be added under the subhead of materials.

10 The Factor for usage of rollers has been taken as 0.65 in case of Bituminous Macadam only.

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in 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	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	433.63	1214.16	P&M-031
			Air compressor 250 cfm	hour	2.800	575.22	1610.62	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	2.000	1308.85	2617.70	P&M-004
			Water tanker 6 KL capacity @ 1 trip per hour	hour	1.000	544.25	544.25	P&M-060
			c) Material					
			Bitumen emulsion @ 0.6 kg per sqm	tonne	2.100	47120.35	98952.74	M-077
			Cost of water	KL	6.000	67.26	403.56	M-189
			d) GST @ 12 % on (a+b+c)				12718.96	
			e) Overhead charges @ 10 % on (a+b+c+d)				11871.03	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13058.13	
			g) Cess @ 1% on (a+b+c+d+e+f)				1436.39	
			Cost for 3500 sqm = a+b+c+d+e+f+g				145075.86	
			Rate per sqm = (a+b+c+d+e+f+g)/3500				41.45	
						say	***41.00***	
			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.					
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. ***Unit = sqm*** ***Taking output = 3500 sqm***					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	433.63	1214.16	P&M-031
			Air compressor 250 cfm	hour	2.800	575.22	1610.62	P&M-001
			Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	1308.85	2617.70	P&M-004
			c) Material					
			Bitumen emulsion @ 0.2 kg per sqm	tonne	0.700	47120.35	32984.25	M-077
			d) GST @ 12 % on (a+b+c)				4689.01	
			e) Overhead charges @ 10 % on (a+b+c+d)				4376.41	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				4814.05	
			g) Cess @ 1% on (a+b+c+d+e+f)				529.55	
			Cost for 3500 sqm = a+b+c+d+e+f+g				53484.07	
			Rate per sqm = (a+b+c+d+e+f+g)/3500				15.28	
						say	***15.00***	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		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	354.00	297.36	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	28522.12	171132.72	P&M-021
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	433.63	953.99	P&M-031
			Air compressor 250 cfm	hour	2.200	575.22	1265.48	P&M-001
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Smooth wheeled roller 8-10 tonnes for initial break down	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	733.63	2861.16	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1393.81	5435.86	P&M-045
			c) Material					
			i) Bitumen@ 3.3 per cent of mix	tonne	14.850	57350.44	851654.03	M-074
			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***					

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Volume of aggregate = 290.1 cum					
			***Grading I (40 mm nominal size)**					
			37.5 - 25 mm 15 per cent	cum	43.510	947.79	41238.34	M-049
			25 - 10 mm 45 per cent	cum	130.550	1505.31	196518.22	M-046
			10 - 5 mm 25 per cent	cum	72.530	1951.33	141529.96	M-040
			5 mm and below15 per cent	cum	43.510	1828.32	79550.20	M-030
			or					
			GradingII(19 mm nominal size)					
			25 - 10 mm 40 per cent	cum	116.040	1505.31	174676.17	M-046
			10 - 5 mm 40 per cent	cum	116.040	1951.33	226432.33	M-040
			5 mm and below 20 per cent	cum	58.020	1828.32	106079.13	M-030
			* Any one of the alternative may be adopted as per approved design					
			(i) for Grading I (40 mm nominal size)					
			d) GST @ 12 % on (a+b+c)				184298.21	
			e) Overhead charges @ 10 % on (a+b+c+d)				172011.66	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				189212.83	
			g) Cess @ 1% on (a+b+c+d+e+f)				20813.41	
			Cost for 205 cum = a+b+c+d+e+f+g				2102154.50	
			Rate per cum = (a+b+c+d+e+f+g)/205 (For Grading I)				10254.41	
						say	***10254.00***	
			(ii) for GradingII(19 mm nominal size)					
			d) GST @ 12 % on (a+b+c)				190100.32	
			e) Overhead charges @ 10 % on (a+b+c+d)				177426.96	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				195169.66	
			g) Cess @ 1% on (a+b+c+d+e+f)				21468.66	
			Cost for 205 cum = a+b+c+d+e+f+g				2168334.90	
			Rate per cum = (a+b+c+d+e+f+g)/205 (For Grading-II)				10577.24	
						say	***10577.00***	
			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.					
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	354.00	113.28	L-12
			Mazdoor including for brooming of key aggregates	day	6.000	310.00	1860.00	L-13

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Mazdoor skilled	day	2.000	442.00	884.00	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	3211.50	19269.00	P&M-025
			Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.570	1308.85	3363.74	P&M-004
			Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	779.65	7796.50	P&M-048
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			c) Material					
			Bitumen@ 5 kg per sqm	tonne	22.500	57350.44	1290384.90	M-074
			Crushed stone coarse aggregate passing 45 mm and retained on 2.8 mm sieve @ 0.06 cum per sqm	cum	270.000	713.27	192582.90	M-033
			Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.015 cum per sqm	cum	67.500	976.11	65887.43	M-031
			d) GST @ 12 % on (a+b+c)				191391.95	
			e) Overhead charges @ 10 % on (a+b+c+d)				178632.49	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				196495.74	
			g) Cess @ 1% on (a+b+c+d+e+f)				21614.53	
			Cost for 4500 sqm = a+b+c+d+e+f+g				2183067.62	
			Rate per sqm = (a+b+c+d+e+f+g)/4500				485.13	
						say	***485.00***	
		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	354.00	141.60	L-12
			Mazdoor including for brooming of key aggregates	day	8.000	310.00	2480.00	L-13
			Mazdoor skilled	day	2.000	442.00	884.00	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	3211.50	19269.00	P&M-025
			Bitumen pressure distributor for@ 1750 sqm per hour	hour	2.570	1308.85	3363.74	P&M-004
			Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	779.65	7796.50	P&M-048
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		c)	**Material**					
			Bitumen@ 6.8 kg per sqm	tonne	30.600	57350.44	1754923.46	M-074
			Crushed stone coarse aggregate (loose passing 63 mm and retained on 2.8 mm sieve @ 0.09 cum per sqm	cum	405.000	753.10	305005.50	M-037
			Key aggregates passing 26.5 mm and retained on 2.8 mm sieve @ 0.018 cum per sqm	cum	81.000	780.53	63222.93	M-026
		d)	**GST @ 12 % on (a+b+c)**				260385.35	
		e)	**Overhead charges @ 10 % on (a+b+c+d)**				243026.32	
		f)	**Contractor's profit @ 10 % on (a+b+c+d+e)**				267328.96	
		g)	**Cess @ 1% on (a+b+c+d+e+f)**				29406.19	
			Cost for 4500 sqm = a+b+c+d+e+f+g				2970024.71	
			Rate per sqm = (a+b+c+d+e+f+g)/4500				660.01	
						say	***660.00***	
		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	354.00	141.60	L-12
			Mazdoor including for brooming of key aggregates	day	8.000	310.00	2480.00	L-13
			Mazdoor skilled	day	2.000	442.00	884.00	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	3211.50	19269.00	P&M-025
			Bitumen pressure distributor for 3000 x 2 sqm @ 1750 sqm per hour	hour	3.430	1308.85	4489.36	P&M-004
			Tipper 5.5 cum capacity	hour	10.000	779.65	7796.50	P&M-048
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
		c)	**Material**					
			Bitumen30 kg per 10 sqm @ 15 kg per 10 sqm for each layer	tonne	9.000	57350.44	516153.96	M-074
			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	780.53	234159.00	M-035
			Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.000	976.11	38068.29	M-031
		d)	**GST @ 12 % on (a+b+c)**				100347.94	
		e)	**Overhead charges @ 10 % on (a+b+c+d)**				93658.08	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				103023.89	
			g) Cess @ 1% on (a+b+c+d+e+f)				11332.63	
			Cost for 3000 sqm = a+b+c+d+e+f+g				1144595.41	
			Rate per sqm = (a+b+c+d+e+f+g)/3000				381.53	
						say	***382.00***	
		Note	2 tippers will be needed to match the capacity of hydraulic chip spreader and front end loader.					
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	354.00	297.36	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	16867.26	101203.56	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	733.63	2861.16	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1393.81	5435.86	P&M-045
			c) Materials					
			Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	57350.44	1097113.92	M-074
			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 - I40 mm (Nominal Size)					
			37.5 - 25 mm 22 per cent	cum	63.190	947.79	59890.85	M-049

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			25 - 10 mm 13 per cent	cum	37.340	1505.31	56208.28	M-046
			10 -4.75 mm 19 per cent	cum	54.580	1951.33	106503.59	M-040
			4.75 mm and below 44 per cent	cum	126.390	1828.32	231081.36	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	12878.76	111014.91	M-188
			or					
			Grading - II19 mm (Nominal Size)					
			25 - 10 mm 30 per cent	cum	86.160	1505.31	129697.51	M-046
			10 - 5 mm 28 per cent	cum	80.430	1951.33	156945.47	M-040
			5 mm and below 40 per cent	cum	114.900	1828.32	210073.97	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	12878.76	111014.91	M-188
			* Any one of the alternative may be adopted as per approved design					
		(i)	**For Grading-I (40 mm nominal size)**					
			d) GST @ 12 % on (a+b+c)				217799.03	
			e) Overhead charges @ 10 % on (a+b+c+d)				203279.10	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				223607.01	
			g) Cess @ 1% on (a+b+c+d+e+f)				24596.77	
			Cost for 205 cum = a+b+c+d+e+f+g				2484273.83	
			Rate per cum = (a+b+c+d+e+f+g)/195 (For Grading I)				12739.87	
						say	***12740.00***	
		(ii)	**For Grading-II (19 mm nominal size)**					
			d) GST @ 12 % on (a+b+c)				222962.97	
			e) Overhead charges @ 10 % on (a+b+c+d)				208098.78	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				228908.65	
			g) Cess @ 1% on (a+b+c+d+e+f)				25179.95	
			Cost for 205 cum = a+b+c+d+e+f+g				2543175.14	
			Rate per cum = (a+b+c+d+e+f+g)/195 (For Grading-II)				13041.92	
						say	***13042.00***	

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.

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
5.7	508		**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 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. 508 complete in all respects ***Unit = cum*** ***Taking output = 195 cum (450 tonnes)***					
			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	16867.26	101203.56	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	733.63	2861.16	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1393.81	5435.86	P&M-045
			c) Material					
			*** Grading I: 13 mm (Nominal Size)**					
			i) Bitumen@ 4.5 per cent of weight of mix	tonne	20.250	57350.44	1161346.41	M-074
			ii) Aggregate Total weight of mix = 450 tonnes Weight of bitumen = 20.25 tonnes Weight of aggregate = 450-20.25 = 429.75 tonnes Taking density of aggregate = 1.5 ton/cum Volume of aggregate = 286.5 cum					
			13.2 - 10 mm20 per cent	cum	57.300	1492.04	85493.89	M-044
			10 - 5 mm 38 per cent	cum	108.870	1951.33	212441.30	M-040
			5 mm and below 40 per cent	cum	114.600	1828.32	209525.47	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	12878.76	111014.91	M-188
			or **Grading II: 10 mm (Nominal Size)**					

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Bitumen@5 per cent of weight of mix	tonne	22.500	57350.44	1290384.90	M-074
			weight of mix = 450 tonne					
			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					
			9.5 - 4.75 mm@ 57 per cent	cum	162.450	1951.33	316993.56	M-040
			4.75 and below@ 41 per cent	cum	116.850	1828.32	213639.19	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	12878.76	111014.91	M-188
			***Any one of the alternative may be adopted as per approved design**					
		(i)	**for Grading -I (13 mm nominal size)**					
			d) GST @ 12 % on (a+b+c)				231960.12	
			e) Overhead charges @ 10 % on (a+b+c+d)				216496.11	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				238145.72	
			g) Cess @ 1% on (a+b+c+d+e+f)				26193.06	
			Cost for 205 cum = a+b+c+d+e+f+g				2645796.00	
			Rate per cum = (a+b+c+d+e+f+g)/195 (For Grading I)				13568.18	
						say	***13568.00***	
5.7		(ii)	**for Grading-II(10 mm nominal size)**					
			d) GST @ 12 % on (a+b+c)				250225.39	
			e) Overhead charges @ 10 % on (a+b+c+d)				233543.70	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				256898.07	
			g) Cess @ 1% on (a+b+c+d+e+f)				28258.79	
			Cost for 205 cum = a+b+c+d+e				2854137.52	
			Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				14636.60	
						say	***14637.00***	

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 SDBC is laid over freshly laid tack coat, provision of broom and 2 mazdoor shall be deleted as the same has been included in the cost of tack coat.

5. The quantity of Bitumen to be adjusted as per job mix formula.

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

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Unit = cum					
			Taking output = 191 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	16867.26	101203.56	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	733.63	2861.16	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1393.81	5435.86	P&M-045
			c) Material					
			i) Bitumen@ 5 per cent of weight of mix	tonne	22.500	57350.44	1290384.90	M-074
			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					
			Grading - I-19 mm (Nominal Size)					
			20 - 10 mm 35 per cent	cum	99.750	1561.06	155715.74	M-045
			10 - 5 mm 23 per cent	cum	65.550	1951.33	127909.68	M-040
			5 mm and below 40 per cent	cum	114.000	1828.32	208428.48	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	12878.76	111014.91	M-188
			or					
			Grading - II-13 mm (Nominal Size)					
			13.2 - 10 mm30 per cent	cum	85.500	1492.04	127569.42	M-044
			10 - 5 mm 25 per cent	cum	71.250	1951.33	139032.26	M-040
			5 mm and below43 per cent	cum	122.550	1828.32	224060.62	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	12878.76	111014.91	M-188
			***Any one of the alternative may be adopted as per approved design**					

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		(i)	**for Grading-I (13 mm nominal size)**					
			d) GST @ 12 % on (a+b+c)				245595.93	
			e) Overhead charges @ 10 % on (a+b+c+d)				229222.87	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				252145.15	
			g) Cess @ 1% on (a+b+c+d+e+f)				27735.97	
			Cost for 205 cum = a+b+c+d+e+f+g				2801332.64	
			Rate per cum = (a+b+c+d+e+f+g)/191 (For Grading I)				14666.66	
						say	***14667.00***	
5.8		(ii)	**for Grading-II(10 mm nominal size)**					
			d) GST @ 12 % on (a+b+c)				245428.93	
			e) Overhead charges @ 10 % on (a+b+c+d)				229067.01	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				251973.71	
			g) Cess @ 1% on (a+b+c+d+e+f)				26438.44	
			Cost for 205 cum = a+b+c+d+e+f+g				2798149.21	
			Rate per cum = (a+b+c+d+e+f+g)/191 (For Grading-II)				14650.00	
						say	***14650.00***	

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.

5.9 510 **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

Unit = sqm

Taking output = 9000 sqm

Case -1 **:-19 mm nominal chipping size**

a) Labour					
Mate	day	0.440	354.00	155.76	L-12
Mazdoor	day	9.000	310.00	2790.00	L-13
Mazdoor skilled	day	2.000	442.00	884.00	L-15
b) Machinery					
Mechanical broom @ 1250 sqm per hour	hour	7.200	433.63	3122.14	P&M-031
Air compressor 250 cfm	hour	7.200	575.22	4141.58	P&M-001

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3211.50	19269.00	P&M-025
			Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	779.65	4677.90	P&M-048
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Bitumen pressure distributor	hour	6.000	1308.85	7853.10	P&M-004
			Smooth wheeled roller 8-10 tonne weight	hour	6.000	561.95	3371.70	P&M-044
			c) Material					
			Bitumen@ 1.20 kg per sqm	tonne	10.800	57350.44	619384.75	M-074
			Crushed stone chipping,19 mm nominal size @ 0.015 cum per sqm	cum	135.000	1784.07	240849.45	M-053
			d) GST @ 12 % on (a+b+c)				109786.65	
			e) Overhead charges @ 10 % on (a+b+c+d)				102467.54	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				112714.30	
			g) Cess @ 1% on (a+b+c+d+e+f)				12397.01	
			Cost for 9000 sqm = a+b+c+d+e+f+g				1252254.26	
			Rate per sqm = (a+b+c+d+e+f+g)/9000				139.14	
						say	***139.00***	
5.9		**Case - II**	**13 mm nominal size chipping**					
			a) Labour					
			Mate	day	0.440	354.00	155.76	L-12
			Mazdoor	day	9.000	310.00	2790.00	L-13
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	7.200	433.63	3122.14	P&M-031
			Air compressor 250 cfm	hour	7.200	575.22	4141.58	P&M-001
			Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3211.50	19269.00	P&M-025
			Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	779.65	4677.90	P&M-048
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004
			Three wheel 80-100 kN Static Roller	hour	6.000	733.63	4401.78	P&M-059
			c) Material					
			Bitumen@ 1.00 kg per sqm	tonne	9.000	57350.44	516153.96	M-074
			Crushed stone chipping,13 mm nominal size @ 0.01 cum per sqm	cum	90.000	1895.58	170602.20	M-052
			d) GST @ 12 % on (a+b+c)				89092.90	
			e) Overhead charges @ 10 % on (a+b+c+d)				83153.37	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				91468.71	
			g) Cess @ 1% on (a+b+c+d+e+f)				10061.56	
			Cost for 9000 sqm = a+b+c+d+e+f+g				1016217.34	
			Rate per sqm = (a+b+c+d+e+f+g)/9000				112.91	
						say	***113.00***	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Note	1.Where the proposed aggregate fails to pass the stripping test, an approved adhesion agent may be added to the binder as per clause 510.2.4. Alternatively, chips may be pre-coated as per clause 510.2.5 2.Input for the second coat, where required, will be the same as per the lst coat mentioned above					
5.10	**511**		**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. ***Unit = sqm*** ***Taking output = 10250 sqm (205 cum)***					
		(i)	**Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .**					
			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			i) Batch type HMP 75 tonne per hour	hour	6.000	16867.26	101203.56	P&M-023
			ii) Electric Generator Set 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			iii) Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			iv) Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			v) Paver finisher hydrostatic with sensor attachment	hour	6.000	3259.29	19555.74	P&M-034
			iv) Smooth wheeled /tandem roller 8-10 tonnes weight	hour	6.000	1393.81	8362.86	P&M-045
			c) Material					
			Bitumen@ 14.60 kg per 10 sqm	tonne	14.970	57350.44	858536.09	M-074
			Crushed stone chipping,13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	276.750	1672.57	462883.75	M-043
			d) GST @ 12 % on (a+b+c)				176696.77	
			e) Overhead charges @ 10 % on (a+b+c+d)				164916.99	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				181408.68	
			g) Cess @ 1% on (a+b+c+d+e+f)				19954.96	
			Cost for 10250 sqm = a+b+c+d+e				2015450.48	
			Rate per sqm = (a+b+c+d+e)/10250				196.63	
						say	***197.00***	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.

Note If a premix sand seal coat of 'B' type is proposed, the same is required to be provided over the open graded premix carpet immediately on the same day. As the same HMP and other machines will be used for laying of premix sand seal coat, out of 6 effective working hours, 4.00 hours may be utilised for laying of premix carpet and balance 2.00 hours for the seal coat. The rate for the premix sand seal coat under clause 513 (case II) has been worked out accordingly by utilising the HMP for 2.00 hours for the purpose of seal coat. In case type 'A' seal coat is proposed, HMP can be worked for six hours for the premix carpet as type 'A' seal coat does not require the use of HMP.

5.10 **(ii)** **Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion**

Unit = sqm

Taking output = 900 sqm (24.3 cum)

a)	**Labour**					
	Mate	day	0.800	354.00	283.20	L-12
	Mazdoor	day	18.000	310.00	5580.00	L-13
	Mazdoor skilled	day	2.000	442.00	884.00	L-15
b)	**Machinery**					
	Concrete mixer 0.4/0.28 cum capacity	hour	6.000	269.91	1619.46	P&M-009
	Smooth wheeled steel roller 8-10 tonne	hour	6.000	561.95	3371.70	P&M-044
c)	**Material**					
	Cationic Bitumen Emulsion @ 21.50 kg per 10 sqm	tonne	1.940	47120.35	91413.48	M-073
	Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	1672.57	40643.45	M-043
d)	**GST @ 12 % on (a+b+c)**				17255.43	
e)	**Overhead charges @ 10 % on (a+b+c+d)**				16105.07	
f)	**Contractor's profit @ 10 % on (a+b+c+d+e)**				17715.58	
g)	**Cess @ 1% on (a+b+c+d+e+f)**				1948.71	
Cost for 900 sqm = a+b+c+d+e+f+g					196820.08	
Rate per sqm = (a+b+c+d+e+f+g)/900					218.69	
				say	***219.00***	

5.11 **512** **Close Graded Premix Surfacing/Mixed Seal Surfacing**

Case I 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.

Unit = sqm

Taking output = 10250 sqm (205 cum)

a)	**Labour**					
	Mate	day	0.840	354.00	297.36	L-12
	Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	310.00	4960.00	L-13
	Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
b)	**Machinery**					
	i) HMP of appropicate capacity.	hour	6.000	28522.12	171132.72	P&M-021
	ii) Electric Generator Set 250 KVA	hour	6.000	1012.39	6074.34	P&M-081

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			iii) Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			iv) Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			v) Paver finisher hydrostatic with sensor attachment	hour	6.000	3259.29	19555.74	P&M-034
			iv) Smooth wheeled8-10 tonnes weight	hour	6.000	561.95	3371.70	P&M-044
			c) Material					
			Type - A					
			* Bitumen@ 22 kg per 10 sqm	tonne	22.500	57350.44	1290384.90	M-074
			Stone crushed aggregates 11.2 mm to 0.09 @ 0.27 cum per 10 sqm	cum	276.750	1059.29	293158.51	M-041
			or					
			Type - B					
			Bitumen @ 19 kg per 10 sqm	tonne	19.480	57350.44	1117186.57	M-074
			Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	276.750	908.85	251524.24	M-042
			d) GST @ 12 % on (a+b+c)				215944.16	
			e) Overhead charges @ 10 % on (a+b+c+d)				201547.88	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				221702.67	
			g) Cess @ 1% on (a+b+c+d+e+f)				24384.32	
			Cost for 10250 sqm = a+b+c+d+e+f+g				2463113.68	
			Rate per sqm =(a+b+c+d+e+f+g)/10250				240.30	
						say	***240.00***	
			* Any one of the alternative may be adopted					
5.12	**513**		**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					
			Unit = sqm					
			Taking output = 10250 sqm (92.25 cum)					
		(i)	**Case - I : Type A**					
			a) Labour					
			Mate	day	0.240	354.00	84.96	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Hydraulic self propelled chip spreader	hour	6.000	3211.50	19269.00	P&M-025
			Tipper 5.5 cum capacity	hour	6.000	779.65	4677.90	P&M-048
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004
			Smooth wheeled roller 8 -10 tonne weight	hour	6.000	561.95	3371.70	P&M-044
			c) Material					
			Bitumen@ 9.80 kg per 10 sqm	tonne	10.050	57350.44	576371.92	M-074
			Crushed stone chipping of 6.7 mm size defined as 100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	92.250	1939.82	178948.40	M-050

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			d) GST @ 12 % on (a+b+c)				96099.16	
			e) Overhead charges @ 10 % on (a+b+c+d)				89692.55	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				98661.81	
			g) Cess @ 1% on (a+b+c+d+e+f)				10852.80	
			Cost for 10250 sqm = a+b+c+d+e+f+g				1096132.68	
			Rate per sqm = (a+b+c+d+e+f+g)/10250				106.94	
						say	***107.00***	

Note Since seal coat is provided immediately over the bituminous layers, mechanical broom for clearing has not been catered.

5.12 **(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.

Unit = sqm

Taking output = 7858 sqm (47.16 cum)

		a) Labour					
		Mate	day	0.160	354.00	56.64	L-12
		Mazdoor	day	4.000	310.00	1240.00	L-13
		b) Machinery					
		HMP of 75 tonnes/hour.	hour	2.000	16867.26	33734.52	P&M-023
		Electric Generator Set 250 KVA	hour	2.000	1012.39	2024.78	P&M-081
		Front end loader 1 cum bucket capacity	hour	2.000	1398.23	2796.46	P&M-017
		Tipper 10 tonne capacity	tonne. km	104 x 'L'	7.65	0.00	Lead =0 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
		Paver finisher hydrostatic with sensor attachment	hour	2.000	3259.29	6518.58	P&M-034
		Smooth wheeled 8-10 tonnes capacity	hour	2.000	561.95	1123.90	P&M-044
		c) Material					
		Bitumen@ 6.80 kg per 10 sqm	tonne	5.340	57350.44	306251.35	M-074
		Crushed stone chipping of 6.7 mm size defined as passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.06 cum per 10 sqm	cum	47.160	1939.82	91481.91	M-050
		d) GST @ 12 % on (a+b+c)				53427.38	
		e) Overhead charges @ 10 % on (a+b+c+d)				49865.55	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				54852.11	
		g) Cess @ 1% on (a+b+c+d+e+f)				6033.73	
		Cost for 7858 sqm = a+b+c+d+e+f+g				609406.91	
		Rate per sqm = (a+b+c+d+e+f+g)/7858				77.55	
					say	***78.00***	

Note Since seal coat is required to be provided over the premix carpet on the same day, out of the 6 working hours of the HMP, 4.00 hours are proposed to be utilised for the premix carpet and the balance 2.00 hours for the seal coat. Hence 2.00 hours have been considered for this case. This may be linked to rate analysis worked out under clause 511.

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
5.14	515		**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 finegrained 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 is not less than 1000C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.					
			Unit = sqm					
			Taking output = 35.00 sqm (0.87 cum) assuming a density of 2.3 tonnes/cum.-2 tonnes					
			a) Labour					
			Mate	day	0.440	354.00	155.76	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			Mazdoor skilled	day	1.000	442.00	442.00	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	0.060	433.63	26.02	P&M-031
			Air compressor 250 cfm	hour	0.060	575.22	34.51	P&M-001
			Mastic cooker 1 tonne capacity	hour	6.000	104.42	626.52	P&M-030
			Bitumen boiler 1500 litres	hour	6.000	241.59	1449.54	P&M-005
			Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	476.11	476.11	P&M-053
			c) Material					
			Base mastic (without coarse aggregates) = 60 per cent Coarse aggregate (6.3mm to 13.2 mm) = 40 per cent . Proportion of material required for mastic asphalt with coarse aggregates (based on mix design done for a specific case)					
			I) Bitumen 85/25 or 30/40 @ 10.2 per cent by weight of mix. 2 x 10.2/100 = 0.204	tonne	0.200	57350.44	11470.09	M-074
			ii) Fine aggregate passing 2.36mm and retained on 0.075mm sieve @ 31.9 per cent by weight of mix = 2 x 31.9/100 = 0.638 tonnes = 0.638/1.625 = 0.39	cum	0.390	624.78	243.66	M-021
			iii) Lime stone dust filler with calcium 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	0.360	12878.76	4636.35	M-188
			iv) Coarse aggregates 6.3 mm to 13.2 mm @ 40 per cent by weight of mix = 2 x 40/100 = 0.8 MT = 0.8/1.456 = 0.55	cum	0.550	1672.57	919.91	M-043
			v) Pre-coated stone chips of 13.2 mm nominal size for skid resistance = 35 x 0.005/10 = 0.018	cum	0.020	2007.08	40.14	M-142

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			vi) Bitumen for coating of chips @ 2 per cent by weight = 0.018 x 1.456 x 2/100 = 0.0005 MT = 0.5kg	kg	0.500	57.00	28.50	M-074
			d) GST @ 12 % on (a+b+c)				2837.89	
			e) Overhead charges @ 10 % on (a+b+c+d)				2648.70	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2913.57	
			g) Cess @ 1% on (a+b+c+d+e+f)				320.49	
			Cost for 35.00 sqm = a+b+c+d+e+f+g				32369.76	
			Rate per sqm = (a+b+c+d+e+f+g)/35				924.85	
						say	***925.00***	

Note 1.The rates for 50 mm & 40 mm thick layers 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 for a specific case and is meant for estimating purposes only. Actual design is required to be done for each case.

5.15 516 **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

(i) 5 mm thickness

Unit = sqm

Taking output = 16000 sqm (80 cum)

Taking density of 2.2 tonnes per cum

weight of mix = 176 tonnes

a) Labour						
Mate	day	0.240	354.00	84.96	L-12	
Mazdoor	day	6.000	310.00	1860.00	L-13	
b) Machinery						
Mechanical broom	hour	6.000	433.63	2601.78	P&M-031	
Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001	
Mobile slurry seal equipment	hour	6.000	1227.43	7364.58	P&M-033	
Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017	
Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	779.65	4677.90	P&M-048	
Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1515.04	9090.24	P&M-037	
Water tanker6 KL capacity	hour	2.000	544.25	1088.50	P&M-060	
c) Material						
Residual Binder @ 11 per cent of mix 80 x 2.2 x 0.11	tonne	19.360	47120.35	912249.98	M-077	
Fine aggregate 4.75 mm and below 87 per cent of total mix,80 x 2.2 x 0.87 = 153.12 tonnes. Taking density1.5, = 153.12/1.5 = 102.08 cum	cum	102.080	1828.32	186634.91	M-030	
Filler @ 2 per cent of total mix = 80 x 2.2 x 0.02	tonne	3.520	12878.76	45333.24	M-188	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Cost of water	KL	12.000	67.26	807.12	M-189
			d) GST @ 12 % on (a+b+c)				142036.07	
			e) Overhead charges @ 10 % on (a+b+c+d)				132567.00	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				145823.70	
			g) Cess @ 1% on (a+b+c+d+e+f)				16040.61	
			Cost for 16000 sqm = a+b+c+d+e				1620101.29	
			Rate per sqm = (a+b+c+d+e)/16000				101.26	
						say	***101.00***	
5.15		**(ii)**	**3 mm thickness**					
			Unit = sqm					
			Taking output = 20000 sqm (60 cum)					
			a) Labour					
			Mate	day	0.200	354.00	70.80	L-12
			Mazdoor	day	5.000	310.00	1550.00	L-13
			b) Machinery					
			Mechanical broom	hour	6.000	433.63	2601.78	P&M-031
			Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
			Mobile slurry seal equipment	hour	6.000	1227.43	7364.58	P&M-033
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler	hour	6.000	779.65	4677.90	P&M-048
			Water tanker6 KL capacity	hour	2.000	544.25	1088.50	P&M-060
			c) Material					
			Residual Binder @ 13 per cent of mix = 60 x 2.2 x 0.13	tonne	17.160	47120.35	808585.21	M-077
			Fine aggregate 3 mm and below 85 per cent of total mix, 60x 2.2 x 0.85 = 112.2 tonnes. Taking density 1.5,	cum	74.800	624.78	46733.54	M-022
			Filler @ 2 per cent of total mix = 60x 2.2 x 0.02	tonne	2.640	12878.76	33999.93	M-188
			Cost of water	KL	12.000	67.26	807.12	M-189
			d) GST @ 12 % on (a+b+c)				110318.41	
			e) Overhead charges @ 10 % on (a+b+c+d)				102963.85	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				113260.23	
			g) Cess @ 1% on (a+b+c+d+e+f)				12458.63	
			Cost for 30000 sqm = a+b+c+d+e+f+g				1258321.18	
			Rate per sqm = (a+b+c+d+e+f+g)/20000				62.92	
						say	***63.00***	
5.15		**(iii)**	**1.5 mm thickness**					
			Unit = sqm					
			Taking output = 24000 sqm (36 cum)					
			a) Labour					
			Mate	day	0.200	354.00	70.80	L-12
			Mazdoor	day	5.000	310.00	1550.00	L-13
			b) Machinery					
			Mechanical broom	hour	6.000	433.63	2601.78	P&M-031
			Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
			Mobile slurry seal equipment	hour	6.000	1227.43	7364.58	P&M-033
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	779.65	4677.90	P&M-048
			Water tanker6 KL capacity	hour	2.000	544.25	1088.50	P&M-060
			c) Material					
			Residual Binder @ 16 per cent of mix, 36 x 2.2 x 0.16	tonne	12.670	47120.35	597014.83	M-077
			Fine aggregate 2.36 mm and below,82 per cent of total mix,36x 2.2 x 0.82 = 64.94 tonnes. Taking density 1.5	cum	43.300	624.78	27052.97	M-022
			Filler @ 2 per cent of total mix = 36x 2.2 x 0.02	tonne	1.580	12878.76	20348.44	M-188
			Cost of water	KL	12.000	67.26	807.12	M-189
			d) GST @ 12 % on (a+b+c)				80930.11	
			e) Overhead charges @ 10 % on (a+b+c+d)				75534.77	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				83088.25	
			g) Cess @ 1% on (a+b+c+d+e+f)				9139.71	
			Cost for 24000 sqm = a+b+c+d+e+f+g				923110.46	
			Rate per sqm = (a+b+c+d+e+f+g)/24000				38.46	
						say	***38.00***	
		Note	1.Tack coat, if required to be provided, before laying slurry seal may be measured and paid separately					
5.17	**518**		**Fog Spray**					
			Providing and applying low viscosity bitumen emulsion for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing.					
			Unit = sqm					
			Taking output = 10500 sqm					
			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031
			Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
			Bitumen emulsion pressure distributor @ 1750 sqm per hour	tonne	6.000	1308.85	7853.10	P&M-004
			c) Material					
			Bitumen emulsion @ 0.75 kg per sqm	tonne	7.880	47120.35	371308.36	M-077
			d) GST @ 12 % on (a+b+c)				46342.44	
			e) Overhead charges @ 10 % on (a+b+c+d)				43252.95	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				47578.24	
			g) Cess @ 1% on (a+b+c+d+e+f)				5233.61	
			Cost for 10500 sqm = a+b+c+d+e+f+g				528594.28	
			Rate per sqm = (a+b+c+d+e+f+g)/10500				50.34	
						say	***50.00***	
			1.In case it is decided by the engineer to blind the fog spray, the following may be added					
			a) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mazdoor for precoating of grit	day	4.000	310.00	1240.00	L-13

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			b) Material					
			Crushed stone grit 3 mm size @ 3.75 kg per sqm	cum	26.250	669.03	17562.04	M-024
			Bitumen emulsion for precoating grit @ 2 per cent of grit,39.38 x	tonne	0.790	47120.35	37225.08	M-077
							56083.76	
							5.34	
						say	***5.00***	
5.18	**519**		**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.					
			Unit = cum					
			Taking output = 205 cum (450 tonne)					
		(i)	**Using bitumen emulsion and 9.5 mm or 13.2 mm size aggregate**					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Bitumen Emulsion 8 per cent	By weight of total mix				
			Filler2 per cent					
			Total aggregates 90 per cent					
			Proportion of aggregates					
			19 mm to 9.5 mm25 per cent					
			9.5 mm to 6 mm29 per cent					
			6 mm to 0.075 mm 36 per cent					
			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor	day	16.000	310.00	4960.00	L-13
			Mazdoor skilled	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	404.42	2426.52	P&M-077
			Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Paver finisher	hour	6.000	3259.29	19555.74	P&M-034
			Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1515.04	5908.66	P&M-037
			Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1393.81	5435.86	P&M-045
			c) Material					
			Bitumen emulsion @ 8 per cent	tonne	36.000	47120.35	1696332.60	M-077
			Filler (lime)@ 2 per cent	tonne	9.000	12878.76	115908.84	M-188
			Aggregates size 19 to 9.5 mm - 450 x 0.25 x 1/1.5	cum	75.000	1561.06	117079.50	M-045
			Aggregates size 9.5 to 6 mm - 450 x 0.29 x 1/1.5	cum	87.000	1951.33	169765.71	M-040

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	1828.32	197458.56	M-030
			d) GST @ 12 % on (a+b+c)				282210.00	
			e) Overhead charges @ 10 % on (a+b+c+d)				263396.00	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				289735.60	
			g) Cess @ 1% on (a+b+c+d+e+f)				31870.92	
			Cost for 205 cum = a+b+c+d+e+f+g				3218962.49	
			Rate per cum = (a+b+c+d+e+f+g)/205				15702.26	
						say	***15702.00***	

(Applicable to cases I to IV)

Note 1.Density of aggregates has been assumed 1.5 gms/cc

2. Tack coat where provided will be measured and paid separately.

*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65

5.18 (ii) Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate

Composition of mix (450 tonne) is assumed to be as under:-

Bitumen Emulsion 8 per cent
Filler2 per cent
Total aggregates 90 per cent
Proportion of aggregates
37.5 mm to 19 mm25 per cent
19 mm to 6 mm 30 per cent
6 mm to 0.075 mm 35 per cent

a) Labour						
Mate	day	0.840	354.00	297.36	L-12	
Mazdoor	day	16.000	310.00	4960.00	L-13	
Mazdoor skilled	day	5.000	442.00	2210.00	L-15	
b) Machinery						
Drum mix plant for cold mixes 60-90 tonne per hour producing average output of 75 tonnes per hour	hour	6.000	404.42	2426.52	P&M-077	
Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018	
Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017	
Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058	
Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00		
Paver finisher	hour	6.000	3259.29	19555.74	P&M-034	
Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1515.04	5908.66	P&M-037	
Smooth wheeled steel tandom roller 6-8 tonnes	hour	6.00x0.65*	1393.81	5435.86	P&M-045	
c) Material						
Bitumen emulsion @ 8 per cent	tonne	36.000	47120.35	1696332.60	M-077	
Filler (lime)@ 2 per cent	tonne	9.000	12878.76	115908.84	M-188	
Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	1059.29	79446.75	M-048	
Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	1624.78	146230.20	M-047	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Aggregates size 6 to 0.075 mm - 450 x 0.35 x 1/1.5	cum	105.000	1828.32	191973.60	M-030
			d) GST @ 12 % on (a+b+c)				274211.61	
			e) Overhead charges @ 10 % on (a+b+c+d)				255930.84	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				281523.92	
			g) Cess @ 1% on (a+b+c+d+e+f)				30967.63	
			Cost for 205 cum = a+b+c+d+e+f+g				3127730.75	
			Rate per cum = (a+b+c+d+e+f+g)/205				15257.22	
						say	***15257.00***	

Note 1.Density of aggregates has been assumed 1.5 gms/cc

2. Tack coat where provided will be measured and paid separately.

*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65

5.18 (iii) Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate

Composition of mix (450 tonne) is assumed to be as under:-

Cutback bitumen 5 per cent
Filler (lime) 2 per cent
Total aggregates 93 per cent

Proportion of aggregates

19 mm to 9.5 mm26 per cent
9.5 mm to 6 mm31 per cent
6 mm to 0.075 mm 36 per cent

a) Labour						
Mate	day	0.840	354.00	297.36	L-12	
Mazdoor	day	16.000	310.00	4960.00	L-13	
Mazdoor skilled	day	5.000	442.00	2210.00	L-15	
b) Machinery						
Drum mix plant for cold mixes 60-90 tonne per hour producing average output of 75 tonnes per hour	hour	6.000	404.42	2426.52	P&M-077	
Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018	
Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017	
Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058	
Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00		
Paver finisher	hour	6.000	3259.29	19555.74	P&M-034	
Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1515.04	5908.66	P&M-037	
Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1393.81	5435.86	P&M-045	
c) Material						
Cutback bitumen @ 5 per cent	tonne	22.500	60330.97	1357446.83	M-076	
Filler (lime)@ 2 per cent	tonne	9.000	12878.76	115908.84	M-188	
Aggregates size 19 to 9.5 mm - 450 x 0.26 x 1/1.5	cum	78.000	1561.06	121762.68	M-045	
Aggregates size 9.5 to 6 mm - 450 x 0..31 x 1/1.5	cum	93.000	1951.33	181473.69	M-040	
Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	1828.32	197458.56	M-030	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			d) GST @ 12 % on (a+b+c)				243510.64	
			e) Overhead charges @ 10 % on (a+b+c+d)				227276.60	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				250004.26	
			g) Cess @ 1% on (a+b+c+d+e+f)				27500.47	
			Cost for 205 cum = a+b+c+d+e+f+g				2777547.33	
			Rate per cum = (a+b+c+d+e+f+g)/205				13549.01	
						say	***13549.00***	
		Note	1.Density of aggregates has been assumed 1.5 gms/cc					
			2. Tack coat where provided will be measured and paid separately.					
			*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.18		**(iv)**	**Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate**					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Cutback bitumen 5 per cent					
			Filler2 per cent					
			Total aggregates 93 per cent					
			Proportion of aggregates					
			37.5 mm to 19 mm25 per cent					
			19 mm to 6 mm 30 per cent					
			6 mm to 0.075 mm 38 per cent					
			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor	day	16.000	310.00	4960.00	L-13
			Mazdoor skilled	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes 60-90 tonne per hour producing output of 75 tonnes per hour	hour	6.000	404.42	2426.52	P&M-077
			Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Paver finisher	hour	6.000	3259.29	19555.74	P&M-034
			Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1515.04	5908.66	P&M-037
			Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1393.81	5435.86	P&M-045
			c) Material					
			Cutback bitumen on @ 5 per cent	tonne	22.500	60330.97	1357446.83	M-076
			Filler (lime)@ 2 per cent	tonne	9.000	12878.76	115908.84	M-188
			Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	1059.29	79446.75	M-048
			Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	1624.78	146230.20	M-047
			Aggregates size 6 to 0.075 mm - 450 x0.38 x 1/1.5	cum	114.000	1828.32	208428.48	M-030
			d) GST @ 12 % on (a+b+c)				235519.90	
			e) Overhead charges @ 10 % on (a+b+c+d)				219818.58	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				241800.43	
			g) Cess @ 1% on (a+b+c+d+e+f)				26598.05	
			Cost for 205 cum = a+b+c+d+e+f+g				2686402.82	
			Rate per cum = (a+b+c+d+e+f+g)/205				13104.40	
						say	***13104.00***	
		Note	1.Density of aggregates has been assumed 1.5 gms/cc					
			2. Tack coat where provided will be measured and paid separately.					
			*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.19	**520**		**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.					
			Unit = cum					
			Taking output = 205 cum (450 tonne)					
			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor	day	16.000	310.00	4960.00	L-13
			Mazdoor skilled	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Hot Mix Plant of appropriate capacity but not less than 75 tonnes/hour	hour	6.000	16867.26	101203.56	P&M-023
			Electric generator set 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Paver finisher	hour	6.000	3259.29	19555.74	P&M-034
			smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65	561.95	2191.61	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65	733.63	2861.16	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem rollers.	hour	6.00x0.65	1393.81	5435.86	P&M-045
			c) Material					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Density 2.20 tonne per cum					
			Weight450 tonne					
			Bitumen5 per cent					
			Filler2 per cent					
			Sand of size 4.75 to 0.075 mm 93 per cent					
			Bitumen@ 5 per cent	tonne	22.500	57350.44	1290384.90	M-074
			Filler (lime)@ 2 per cent	tonne	9.000	12878.76	115908.84	M-188
			Sand of size 4.75 to 0.075 mm - 450 x 0.93 x 1/1.5	cum	288.620	601.77	173682.86	M-004

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			d) GST @ 12 % on (a+b+c)				207978.67	
			e) Overhead charges @ 10 % on (a+b+c+d)				194113.43	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				213524.77	
			g) Cess @ 1% on (a+b+c+d+e+f)				23487.72	
			Cost for 205 cum = a+b+c+d+e+f+g				2372260.20	
			Rate per cum = (a+b+c+d+e+f+g)/205				11572.00	
						say	***11572.00***	

Note 1. Tack coat will be measured and paid separately

2. 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 this roller, their usage rates has been multiplied by a factor of 0.65

5.21 522 **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.

Unit = sqm

Taking output = 10500 sqm

a) Labour						
Mate	day	0.240	354.00	84.96	L-12	
Mazdoor	day	6.000	310.00	1860.00	L-13	
b) Machinery						
Mechanical broom @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031	
Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001	
Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004	
Hydraulic Chip spreader	hour	6.000	3211.50	19269.00	P&M-025	
Smooth wheeled road roller 8-10 tonne	hour	6.000	561.95	3371.70	P&M-044	
c) Material						
Modified binder	tonne	9.450	52465.49	495798.88	M-078	
Crushed stone aggregates 5.6 mm size	cum	105.000	1939.82	203681.10	M-050	
d) GST @ 12 % on (a+b+c)				88556.62		
e) Overhead charges @ 10 % on (a+b+c+d)				82652.85		
f) Contractor's profit @ 10 % on (a+b+c+d+e)				90918.13		
g) Cess @ 1% on (a+b+c+d+e+f)				10000.99		
Cost for 10500 sqm = a+b+c+d+e+f+g				1010100.43		
Rate per sqm = (a+b+c+d+e+f+g)/10500				96.20		
			say	***96.00***		

5.21 **(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.

Unit = sqm

Taking output = 10500 sqm

a) Labour					
Mate	day	0.240	354.00	84.96	L-12

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031
			Air compressor 250 cfm capacity	hour	6.000	575.22	3451.32	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004
			Hydraulic Chip spreader	hour	6.000	3211.50	19269.00	P&M-025
			Smooth wheeled road roller 8-10 tonne	hour	6.000	561.95	3371.70	P&M-044
			c) Material					
			Modified binder	tonne	11.550	52465.49	605976.41	M-078
			Crushed stone chipping 11.2 mm size	cum	105.000	1951.33	204889.65	M-051
			d) GST @ 12 % on (a+b+c)				101922.95	
			e) Overhead charges @ 10 % on (a+b+c+d)				95128.09	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				104640.90	
			g) Cess @ 1% on (a+b+c+d+e+f)				11510.50	
			Cost for 10500 sqm = a+b+c+d+e+f+g				1162560.36	
			Rate per sqm = (a+b+c+d+e+f+g)/10500				110.72	
						say	***111.00***	
5.21		**(iii)**	**Stress absorbing membrane (SAM) crack width above 9 mm and cracked area above 50 per cent**					
			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 per cent 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.					
			Unit = sqm					
			Taking output = 10500 sqm					
			a) Labour					
			Mate	day	0.240	354.00	84.96	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	433.63	2601.78	P&M-031
			Air compressor 250 cfm capacity	hour	6.000	575.22	3451.32	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1308.85	7853.10	P&M-004
			Hydraulic Chip spreader	hour	6.000	3211.50	19269.00	P&M-025
			Smooth wheeled road roller 8-10 tonne	hour	6.000	561.95	3371.70	P&M-044
			c) Material					
			Modified binder	tonne	15.750	52465.49	826331.47	M-078
			Crushed stone aggregates 11.2 mm size	cum	126.000	1951.33	245867.58	M-051
			d) GST @ 12 % on (a+b+c)				133388.99	
			e) Overhead charges @ 10 % on (a+b+c+d)				124496.39	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				136946.03	
			g) Cess @ 1% on (a+b+c+d+e+f)				15064.06	
			Cost for 10500 sqm = a+b+c+d+e+f+g				1521470.38	
			Rate per sqm = (a+b+c+d+e+f+g)/10500				144.90	
						say	***145.00***	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Note	In case 2nd coat is also required to be provided, material provided for the 2nd coat shall be as per table 500-47.					
5.22	**519.3**		**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					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
		(i)	**75 mm thickness**					
			a) Labour					
			Mate	day	1.000	354.00	354.00	L-12
			Mazdoor	day	12.000	310.00	3720.00	L-13
			Mazdoor skilled	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	20912.39	125474.34	P&M-064
			Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Pneumatic tyred roller12-15 tonnes.	hour	6.00x0.65*	1515.04	5908.66	P&M-037
			Smooth wheeled steel roller6-8 tonnes.	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Water tanker6 KL capacity	hour	1.000	544.25	544.25	P&M-060
			c) Material					
			Bitumen emulsion @ 45 litres per tonne	tonne	20.250	47120.35	954187.09	M-077
			Crushed stone aggregates 40 mm nominal size	cum	297.000	1393.81	413961.57	M-055
			Cost of water	KL	6.000	67.26	403.56	M-189
			d) GST @ 12 % on (a+b+c)				185150.57	
			e) Overhead charges @ 10 % on (a+b+c+d)				172807.20	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				190087.92	
			g) Cess @ 1% on (a+b+c+d+e+f)				20909.67	
			Cost for 10500 sqm = a+b+c+d+e+f+g				2111876.80	
			Rate per sqm = (a+b+c+d+e+f+g)/205				10301.84	
						say	***10302.00***	
		Note	**(Case I to III)**					
			1. These mixes are considered suitable for minor repair work and temporary road surface improvement.					
			2. In case concrete mixtures are required to be used for mixing, a number of these will be needed to match the capacity of road rollers.					
			3. Tack coat, where provided, will be measured and paid separately.					
			*4.Both the rollers have to be available at site to match with the output of batch mixing plant and paver finisher. A multiplying factor of 0.65 has been adopted to cater for the idling period of road rollers.					

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
5.22		(ii)	**40 mm thickness**					
			a) Labour					
			Mate	day	1.000	354.00	354.00	L-12
			Mazdoor	day	12.000	310.00	3720.00	L-13
			Mazdoor skilled	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Batch type cold mixing plant100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	20912.39	125474.34	P&M-064
			Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1515.04	5908.66	P&M-037
			Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Water tanker6 KL capacity	hour	1.000	544.25	544.25	P&M-060
			c) Material					
			Bitumen emulsion @ 70 litres per tonne	tonne	31.500	47120.35	1484291.03	M-077
			Crushed stone aggregates 14 mm nominal size	cum	287.000	1895.58	544031.46	M-052
			Cost of water	KL	6.000	67.26	403.56	M-189
			d) GST @ 12 % on (a+b+c)				264371.43	
			e) Overhead charges @ 10 % on (a+b+c+d)				246746.67	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				271421.34	
			g) Cess @ 1% on (a+b+c+d+e+f)				29856.35	
			Cost for 10500 sqm = a+b+c+d+e+f+g				3015491.06	
			Rate per sqm = (a+b+c+d+e+f+g)/205				14709.71	
						say	***14710.00***	
5.22		(iii)	**25 mm thickness**					
			a) Labour					
			Mate	day	1.000	354.00	354.00	L-12
			Mazdoor	day	12.000	310.00	3720.00	L-13
			Mazdoor skilled	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	20912.39	125474.34	P&M-064
			Electric generator 125 KVA	hour	6.000	1003.54	6021.24	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Tipper 10 tonne capacity	tonne. km	450 x L	7.65	0.00	Lead =0 km & P&M-058

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Pneumatic tyred roller	hour	6.00x0.65*	1515.04	5908.66	P&M-037
			Smooth wheeled steel roller	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Water tanker6 KL capacity	hour	1.000	544.25	544.25	P&M-060
			c) Material					
			Bitumen emulsion @ 85 litres per tonne	tonne	38.250	47120.35	1802353.39	M-077
			Crushed stone aggregates 6 mm nominal size	cum	270.000	1939.82	523751.40	M-050
			Cost of water	KL	6.000	67.26	403.56	M-189
			d) GST @ 12 % on (a+b+c)				300105.31	
			e) Overhead charges @ 10 % on (a+b+c+d)				280098.29	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				308108.12	
			g) Cess @ 1% on (a+b+c+d+e+f)				33891.89	
			Cost for 10500 sqm = a+b+c+d+e+f+g				3423081.18	
			Rate per sqm = (a+b+c+d+e+f+g)/205				16697.96	
						say	***16698.00***	
5.23			**Open - Graded Premix Surfacing**					
			MORTH - 508.2; IRC: SP : 100 - 2004, chapter 6.5 Using Cold Mix Binder (Exceeds IS 8887 : 2004 of SS-2) Providing, laying and rolling open graded premix carpet of 20mm thickness copmposed of 13.2 mm to 5.6 mm aggregates using Cold Mix Binder (Tailor made) to reguired line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 KN static roller capacity, finished to required level and grades to be followed by seal coat (Application: Cold OGPC as per Design mix & Implementation by Manufacturer's discretion only)					
			Unit = sqm					
			Taking output = 900 s1m (24.3 cum)					
			a) Labour					
			Mate	day	0.800	354.00	283.20	L-12
			Mazdoor	day	18.000	310.00	5580.00	L-13
			Mazdoor skilled	day	2.000	442.00	884.00	L-15
			b) Machinery					
			Concrete mixer 0.4/0.28 cum capacity	hour	6.000	269.91	1619.46	P&M-009
			Smooth wheeled steel roller 8-10 tonne	hour	5.000	561.95	2809.75	P&M-044
			c) Material					
			Cold mix binder @ 2.0-2.3 kg per sqm	tonne	1.940	63676.99	123533.36	M-197
			Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	1672.57	40643.45	M-043
			d) GST @ 12 % on (a+b+c)				21042.39	
			e) Overhead charges @ 10 % on (a+b+c+d)				19639.56	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				21603.52	
			g) Cess @ 1% on (a+b+c+d+e+f)				2376.39	
			Cost for 900 sqm = a+b+c+d+e+f+g				240015.08	
			Rate per sqm = (a+b+c+d+e+f+g)/900				266.68	
						say	***267.00***	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
5.24.1			**Seal Coat**					
			MORTH - 510 ; IRC: SP : 100 - 2004, chapter 6.5 & 6.2 Using Cold Mix Binder (Exceeds IS 8887 : 2004 of SS-2) Providing, laying and rolling of seal coat sealing the voids i a bituminous surface laid to the specified levels, grade and cross fall using Cold Mix Binder and stone chips passing 6.3 mm and IS sieve (Application: Seal Coat (A), Liquid Seal Coat as per Design mix & implementation by Manufacturers's discretion only)					
			Unit = sqm					
			Taking output = 10250 sqm (92.25 cum)					
		(i)	***Case - I : Type A***					
			a) Labour					
			Mate	day	0.240	354.00	84.96	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Hydraulic Self propelled chip spreader	hour	6.000	3211.50	19269.00	P&M-025
			Tipper 5.5 cum capacity	hour	6.000	779.65	4677.90	P&M-048
			Front end loader 1 cum bucket capacity		6.000	1398.23	8389.38	P&M-017
			Bitumen pressure distributor @ 1750 sqm per hour		6.000	1308.85	7853.10	P&M-004
			Smooth wheeled roller 8-10 tonne weight		6.000	561.95	3371.70	P&M-044
			c) Material					
			Cold mix binder @ 1.2-1.4 kg per sqm	tonne	13.330	63676.99	848814.28	M-197
			Crushed stone chip passing 6.3 mm sieve applied @ 0.09 cum per 10 sqm	cum	92.250	1939.82	178948.40	M-050
			d) GST @ 12 % on (a+b+c)				128792.25	
			e) Overhead charges @ 10 % on (a+b+c+d)				120206.10	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				132226.71	
			g) Cess @ 1% on (a+b+c+d+e+f)				14544.94	
			Cost for 10250 sqm = a+b+c+d+e+f+g				1469038.72	
			Rate per sqm = (a+b+c+d+e+f+g)/10250				143.32	
						say	***143.00***	
5.24.2		*(ii)*	**Case - II : Type B**					
			MORTH - 510 ; IRC: SP : 100 - 2004, chapter 6.5 Using Cold Mix Binder (Exceeds IS 8887 : 2004 of SS-2) Providing, laying and rolling of seal coat sealing the voids i a bituminous surface laid to the specified levels, grade and cross fall using Cold Mix Binder and stone chips passing 9.5 mm and IS sieve & retain on 2.36 mm IS sieve (Application: Seal Coat (C), as per Design mix & implementation by Manufacturers's discretion only)					
			Unit = sqm					
			Taking output = 7858 sqm (47.16 cum)					
			a) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mazdoor	day	4.000	310.00	1240.00	L-13
			b) Machinery					
			Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	2.000	404.42	808.84	P&M-077
			Electric Generator set 250 KVA	hour	2.000	1012.39	2024.78	P&M-081
			Front end loader 1 cum bucket capacity	hour	2.000	1398.23	2796.46	P&M-017

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Tipper 10 tonne capacity	tonne. km	104x'L'	8.30	0.00	Lead =0 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading					
			Paver finisher hydrostatic with sensor attachment	hour	2.000	3259.29	6518.58	P&M-034
			Smooth wheeled 8-10 tonnes capacity	hour	2.000	561.95	1123.90	P&M-044
			c) Material					
			Cold mix binder @ 1.0-1.2 kg per sqm	tonne	8.640	63676.99	550169.19	M-197
			Crushed stone chip passing 9.5 mm sieve and retained on 2.36 mm sieve applied @ 0.06 cum per 10 sqm	cum	47.150	1939.82	91462.51	M-050
			d) GST @ 12 % on (a+b+c)				78744.11	
			e) Overhead charges @ 10 % on (a+b+c+d)				73494.50	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				80843.95	
			g) Cess @ 1% on (a+b+c+d+e+f)				8892.83	
			Cost for 7858 sqm = a+b+c+d+e+f+g				898176.29	
			Rate per sqm = (a+b+c+d+e+f+g)/7858				114.30	
						say	***114.00***	

5.25.1 Close Graded Premix Surfacing/Mixed Seal Surfacing

Case I Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour.

MORTH - 511 ; IRC: SP : 100 - 2004, chapter 6.5 Using Cold Mix Binder (Exceeds IS 8887 : 2004 of SS-2) 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 using Cold Mix Binder 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 ton cappacity and finishing to required level and grade (Application: Cold MiSS (Mix Seal Surfacing as per Designmix & Implementation by Manufacturer's discretion only)

Unit = sqm

Taking output = 10250 sqm (205 cum)

			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor working with WMP, road sweeper, paver and roller	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	5.000	404.42	2022.10	P&M-077
			Electric Generator set 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	104x'L'	8.30	0.00	Lead =0 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading					
			Paver finisher hydrostatic with sensor attachment	hour	6.000	3259.29	19555.74	P&M-034

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Smooth wheeled 8-10 tonnes capacity	hour	6.000	561.95	3371.70	P&M-044
			c) Material					
			Type - A					
			Cold mix binder @ 3.0 kg per sqm	tonne	30.750	63676.99	1958067.44	M-197
			Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27cum per 10 sqm	cum	276.750	1059.29	293158.51	M-041
			d) GST @ 12 % on (a+b+c)				275772.79	
			e) Overhead charges @ 10 % on (a+b+c+d)				257387.94	
			e) Overhead charges @ 10 % on (a+b+c+d)				283126.73	
			g) Cess @ 1% on (a+b+c+d+e+f)				31143.94	
			Cost for 10250 sqm = a+b+c+d+e+f+g				3145537.97	
			Rate per sqm = (a+b+c+d+e+f+g)/10250				306.88	
						say	***307.00***	
5.25.2			**Close Graded Premix Surfacing/Mixed Seal Surfacing**					
		Case I	**Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour.**					
			MORTH - 511 ; IRC: SP : 100 - 2004, chapter 6.6 Using Cold Mix Binder (Exceeds IS 8887 : 2004 of SS-2)					
			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 using Cold Mix Binder 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 ton cappacity and finishing to required level and grade (Application: Cold MSS (Mix Seal Surfacing as per Designmix & Implementation by Manufacturer's discretion only)					
			Unit = sqm					
			Taking output = 10250 sqm (205 cum)					
			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor working with WMP, road sweeper, paver and roller	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	5.000	404.42	2022.10	P&M-077
			Electric Generator set 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	104x'L'	8.30	0.00	Lead =0 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading					
			Paver finisher hydrostatic with sensor attachment	hour	6.000	3259.29	19555.74	P&M-034
			Smooth wheeled 8-10 tonnes capacity	hour	6.000	561.95	3371.70	P&M-044
			c) Material					
			Type - B					
			Cold mix binder @ 3.3 kg per sqm	tonne	33.830	63676.99	2154192.57	M-197

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27cum per 10 sqm	cum	276.750	908.85	251524.24	M-042
			d) GST @ 12 % on (a+b+c)				294311.69	
			e) Overhead charges @ 10 % on (a+b+c+d)				274690.91	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				302160.00	
			g) Cess @ 1% on (a+b+c+d+e+f)				33237.60	
			Cost for 10250 sqm = a+b+c+d+e+f+g				3356997.63	
			Rate per sqm = (a+b+c+d+e+f+g)/10250				327.51	
						say	***328.00***	
5.26			**MORTH - 504 IRC: SP : 100 - 2004, chapter 7.1 Using Cold Mix Binder (Exceeds IS 8887 : 2004 of SS-2)**					
			Providing, laying and rolling of cold BM (50 mm) on prepared base consisting of a mixture of unheated mineral aggregate (19 mm nominal size) and Cold Mix Binder, including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finsishing to specified grades and levels (Application: Cold BM as per Designmix & Implementation by manufacturer's discretion only)					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mazdoor working with CMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction.	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	404.42	2426.52	P&M-077
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	433.63	953.99	P&M-031
			Air Compressor 250 cfm	hour	2.200	575.22	1265.48	P&M-001
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Electric Generator set 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	104x'L'	6.85	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading					
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	733.63	2861.16	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem rollers.	hour	6.00x0.65*	1393.81	5435.86	P&M-045
			c) Material					
			Type - B					
			Cold mix binder @ 5.5% by Wt. of mix	tonne	24.750	63676.99	1576005.50	M-197

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Weight of mix=205x2.2=450 tonne Aggregate Total weight of mix = 450 tonnes Weight of bitumen=24.75 tonnes Weight of aggregate = 450 - 24.75 = 425.25 tonnes Taking density of aggregate = 1.5 ton/cum Volume of aggregate=283.50 cum					
			Grading II (19 mm nominal size)					
			25-10 mm 40 per cent	cum	113.400	1505.31	170702.15	M-046
			10-5 mm 40 per cent	cum	113.400	1951.33	221280.82	M-040
			5m and below 20 per cent	cum	56.700	1828.32	103665.74	M-030
			* Any one of the alternative may be adopted as per approved design					
		(ii)	For Grading II (19 mm nominal size)					
			d) GST @ 12 % on (a+b+c)				255393.08	
			e) Overhead charges @ 10 % on (a+b+c+d)				238366.87	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				262203.56	
			g) Cess @ 1% on (a+b+c+d+e+f)				28842.39	
			Cost for 205 cum = a+b+c+d+e+f+g				2913081.55	
			Rate per cum = (a+b+c+d+e+f+g)/205 (For Grading II)				14210.15	
						say	***14210.00***	

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 be 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 oost of tack coat

5.27 MORTH - 504 IRC: SP : 100 - 2004, chapter 7.2 Using Cold Mix Binder (Exceeds IS 8887 : 2004 of SS-2)

Providing, laying of Semi Dense Bituminous Concrete with 100-120 TPH HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading (9.5 mm nominal size), premixed with cold mix binder @ 7.5% by weight of mix, transporting the cold mix to work site, laying with a hydrostatic paver finisher with sensor control to required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction (Application: Cold BM as per Designmix & Implementation by manufacturer's discretion only)

Unit = cum

Taking output = 195 cum (450 tonnes)

a)	**Labour**					
	Mate	day	0.840	354.00	297.36	L-12

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Mazdoor working with CMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction.	day	16.000	310.00	4960.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	442.00	2210.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	404.42	2426.52	P&M-077
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3259.29	19555.74	P&M-034
			Electric Generator set 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Tipper 10 tonne capacity	tonne. km	104x'L'	6.85	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading					
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	561.95	2191.61	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	733.63	2861.16	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandom rollers.	hour	6.00x0.65*	1393.81	5435.86	P&M-045
			c) Material					
			Cold mix binder @ 7.5% by Wt. of mix	tonne	33.750	63676.99	2149098.41	M-197
			Weight of mix=450 tonne					
			Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen=33.75 tonnes					
			Weight of aggregate = 450 - 33.75 = 416.25 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate=277.50 cum					
			9.5 - 4.75 mm @ 57 per cent	cum	158.175	1951.33	308651.62	M-040
			4.75 and below W 43 per cent	cum	119.325	1828.32	218164.28	M-030
			* Any one of the alternative may be adopted as per approved design					
		(ii)	For Grading II (9.50 mm nominal size)					
			d) GST @ 12 % on (a+b+c)				327637.95	
			e) Overhead charges @ 10 % on (a+b+c+d)				305795.42	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				336374.97	
			g) Cess @ 1% on (a+b+c+d+e+f)				37001.25	
			Cost for 195 cum = a+b+c+d+e+f+g				3737125.87	
			Rate per sqm = (a+b+c+d+e+f+g)/195 (For Grading II)				19164.75	
						say	***19165.00***	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		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 be 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 SDBC is laid over freshly laid tack coat, provision of broom and 2 mazdoors for the same shall be deleted as the same has been included in the oost of tack coat 5. The quantity of Bitumen to be adjusted as per job mix formula.					
5.28	16.57.2		Providing and laying Bituminous concrete using crushed stone aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site by tippers, laying with paver finisher equiped with electronic sensor to the required grade, level and alignment and rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction and density as per specification, complete and as per directions of Engineer-in-Charge.					
		(a)	**40/50 mm compacted thickness with bitumen of grade VG-30 @ 5.5% (percentage by weight of total mix) and lime filler @ 3% (percentage by weight of Aggregate) and waste plastic additive @ 8% (percentage by weight of bitumen) prepared in Batch Type Hot Mix Plant of 100- 120 TPH capacity.** Details of cost for 191 cum (450 tonnes)					
			a) Material					
			Paving Asphalt VG-30 of approved quality' @5.50% (percentage by weight of total mix) Aggregate Total weight of mix = 450 tonnes Weight of bitumen = 24.75 tonnes Weight of aggregate = 450 -24.75 = 425.25 tonnes Taking density of aggregate = 1.5 tonne/cum Volume of aggregate =425.25/1.5 = 283.50cum Grading - II/19 mm (Nominal Size) 13.2 - 10mm size = 30% of 283.50 = 85.05 cum 10 - 5mm size = 25% of 283.50 = 70.88 cum 5mm and below = 42% of 283.50 = 119.07 cum, Waste Plastic @ 8% of the weigh of bitumen i.e. 24.75*8%	tonne	24.750	39570.00	979357.50	M-198
			Waste plastic additive	tonne	1.980	40000.00	79200.00	M-199
			Stone Aggregate (Single size) :12.5 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1895.58	81036.05	M-052
			Stone Aggregate (Single size) :10 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1951.33	83419.36	M-051
			Stone Aggregate (Single size) :10 mm nominal size(Qty = 70.88 * 50 /100)	cum	35.440	1951.33	69155.14	M-051

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Stone Aggregate (Single size) :06 mm nominal size(Qty = 70.88 * 50 /100)	cum	35.440	1939.82	68747.22	M-050
			Stone chippings/ screenings 4.75 mm nominal size (Qty = 283.5 * 40 /100)	cum	113.400	1059.29	120123.49	M-041
			Dry hydrated lime (factory made)	quintal	127.600	290.00	37004.00	M-200
			b) Transport					
			Carriage of Tar bitumen	tonne	24.750	0.00	0.00	
			Carriage of Stone aggregate below 40 mm nominal size	cum	275.000	0.00	0.00	
			Carriage of Lime (consitering density of lime as 1.29 T per cum) V = 12.758/1.29 = 9.89 cum	cum	9.890	0.00	0.00	
			Tipper -5 Cum, Tipper 10 tonne capacity (Taken 10 km average lead)Km	tonne/ km	4,500.000	0.00	0.00	
			Add 10 per cent of cost of carriage to cover cost of loading and unloading		10 per cent of cost of carriage		0.00	
			c) MACHINERY/ HIRE CHARGES:					
			Hot mix Plant -120 TPH capacity	hour	3.000	15000.00	45000.00	P&M-095
			Hot mix Plant 100 TPH Capacity	hour	3.000	13000.00	39000.00	P&M-096
			Paver finisher Hydrostatic with sensor control 100 TPH	hour	6.000	3259.29	19555.74	P&M-034
			Generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity (incl POL)	hour	6.000	1398.23	8389.38	P&M-017
			Smooth Wheeled Roller 8 to 10 tonne for initial break down rolling.(6*0.65)	hour	3.900	561.95	2191.61	P&M-044
			Vibratory roller 8 to 10 tonne for intermediate rolling.(6*0.65)	hour	3.900	600.00	2340.00	P&M-062 (A)
			Tandem Road Roller, Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65)	hour	3.900	1393.81	5435.86	P&M-045
			d) Labour					
			Mate	each	0.840	354.00	297.36	L-12
			Beldar working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	each	14.000	310.00	4340.00	L-13
			Skilled Beldar (for floor rubbing etc.) for checking line & levels	each	5.000	442.00	2210.00	L-15
			Other Costs					
			e) GST @ 12 % on (a+b+c+d)				198345.25	
			f) Overhead charges @ 10 % on (a+b+c+d+e)				185122.23	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				203634.45	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				22399.79	
			Cost for 191 cum(450 Tonne) (a+b+c+d+e+f+g+h)				**2262378.77**	
			Cost per cum. (a+b+c+d+e+f+g+h)/191				11844.92	
						Say	**11844.90**	

16.57.6 **(b) 40/50 mm compacted thickness with bitumen of grade VG-30 @ 5.5% (percentage by weight of total mix) and lime filler @ 3% (percentage by weight of Aggregate) and waste plastic additive @ 8% (percentage by weight of bitumen) prepared in drum Type Hot Mix Plant of 60-90 TPH capacity.**

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Details of cost for 191 cum (450 tonnes)					
			a) Material					
			Paving Asphalt VG-30 of approved quality, @5.50% (percentage by weight of total mix)	tonne	24.750	39570.00	979357.50	M-198
			Aggregate Total weight of mix = 450 tonnes Weight of bitumen = 24.75 tonnes Weight of aggregate = 450 -24.75 = 425.25 tonnes Taking density of aggregate = 1.5 tonne/cum Volume of aggregate = 425.25/ 1.5=283.50cum Grading - II/19 mm (Nominal Size) 13.2 - 10mm size = 30% of 283.50 = 85.05 cum 10 - 5mm size = 25% of 283.50 = 70.88 cum 5mm and below = 42% of 283.50 = 119.07 cum Waste Plastic @ 8% of the weigh of bitumen i.e. 24.75*8%					
			Waste plastic additive	tonne	1.980	40000.00	79200.00	M-199
			Stone Aggregate (Single size) :12.5 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1895.58	81036.05	M-052
			Stone Aggregate (Single size) :10 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1951.33	83419.36	M-051
			Stone Aggregate (Single size) :10 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1951.33	69155.14	M-051
			Stone Aggregate (Single size) :06 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1939.82	68747.22	M-050
			Stone chippings/ screenings 4.75 mm nominal size (Qty = 283.5 * 40 /100)	cum	113.400	1059.29	120123.49	M-041
			Dry hydrated lime (factory made)	quintal	127.600	290.00	37004.00	M-200
			b) Transport @5.50% (percentage by weight of total mix					
			Carriage of Tar bitumen	tonne	24.750	0.00	0.00	
			Carriage of Stone aggregate below 40 mm nominal size Lime Filler @ 2% (percentage by weight of aggregate)	cum	275.000	0.00	0.00	
			Carriage of Lime (consitering density of lime as 1.29 T per cum) V = 12.758/1.29 = 9.89 cum	cum	9.890	0.00	0.00	
			Tipper -5 Cum Tipper 10 tonne capacity (Taken 10 km average lead) 450 x 10 = 4500 tonne Km	tonne/ km	4,500.000	0.00	0.00	
			Add 10 per cent of cost of carriage to cover cost of loading and unloading		10 per cent of cost of carriage		0.00	

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			c) MACHINERY/ HIRE CHARGES:					
			Drum Type HMP of 60-90 TPH capacity @ 75 tonne per hour actual output	hour	6.000	12000.00	72000.00	P&M-097
			Paver finisher Hydrostatic with sensor control 100 TPH	hour	6.000	3259.29	19555.74	P&M-034
			Generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity (incl POL)	hour	6.000	1398.23	8389.38	P&M-017
			Smooth Wheeled Roller 8 to 10 tonne for initial break down rolling.(6*0.65)	hour	3.900	561.95	2191.61	P&M-044
			Vibratory roller 8 to 10 tonne for intermediate rolling.(6*0.65)	hour	3.900	600.00	2340.00	P&M-062 (A)
			Tandem Road Roller, Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65)	hour	3.900	1393.81	5435.86	P&M-045
			d) Labour					
			Mate	each	0.840	354.00	297.36	L-12
			Beldar working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	each	14.000	310.00	4340.00	L-20
			Skilled Beldar (for floor rubbing etc.) for checking line & levels	each	5.000	442.00	2210.00	L-15
			Other Costs					
			e) GST @ 12 % on (a+b+c+d)				196905.25	
			f) Overhead charges @ 10 % on (a+b+c+d+e)				183778.23	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				202156.05	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				22237.17	
			Cost for 191 cum(450 Tonne) (a+b+c+d+e+f+g+h)				**2245953.75**	
			Cost per cum. (a+b+c+d+e+f+g+h)/191				11758.92	
			Cost per cum (Per Tonne).			**Say**	**11758.90**	
5.29	16.57..3		Providing and laying Bituminous concrete using crushed stone aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site by tippers, laying with paver finisher equiped with electronic sensor to the required grade, level and alignment and rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction and density as per specification, complete and as per directions of Engineer-in-Charge.					
		(a)	**40/50 mm compacted thickness with bitumen of grade PMB-40 @ 5.5% (percentage by weight of total mix) and lime filler @ 3% (percentage by weight of Aggregate) prepared in Batch Type Hot Mix Plant of 100-120 TPH capacity.**					
			Details of cost for 191 cum (450 tonnes)					
			a) Material					
			Bitumen grade PMB - 40, @5.50% (percentage by weight of total mix)	tonne	24.750	32200.00	796950.00	M-078 (A)
			Aggregate Total weight of mix = 450 tonnes Weight of bitumen = 24.75 tonnes Weight of aggregate = 450 -24.75 = 425.25 tonnes Taking density of aggregate = 1.5 tonne/cum Volume of aggregate =425.25/1.5 = 283.50cum					

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Grading - II/19 mm (Nominal Size) 13.2 - 10mm size = 30% of 283.50 = 85.05 cum 10 - 5mm size = 25% of 283.50 = 70.88 cum 5mm and below= 42% of 283.50 = 119.07 cum					
			Stone Aggregate (Single size) :12.5 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1895.58	81036.05	M-052
			Stone Aggregate (Single size) :10 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1951.33	83419.36	M-051
			Stone Aggregate (Single size) :10 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1951.33	69155.14	M-051
			Stone Aggregate (Single size) :06 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1939.82	68747.22	M-050
			Stone chippings/ screenings 4.75 mm nominal size (Qty = 283.5 * 40 /100)	cum	113.400	1059.29	120123.49	M-041
			Dry hydrated lime (factory made)	quintal	127.600	290.00	37004.00	M-200
			b) Transport					
			Carriage of Tar Bitumen	tonne	24.750	0.00	0.00	
			Carriage of Stone aggregate below 40 mm nominal size	cum	275.000	0.00	0.00	
			Lime Filler @ 2% (percentage by weight of aggregate) Carriage of Lime, (consitering density of lime as 1.29 T per cum) V = 12.758/1.29 = 9.89 cum	cum	9.890	0.00	0.00	
			Tipper 10 tonne capacity (Taken 10 km average lead) 450 x 10 = 4500 tonne Km Tipper -5 Cum	tonne/ km	4,500.000	0.00	0.00	
			Add 10 per cent of cost of carriage to cover cost of loading and unloading		10 per cent of cost of carriage		0.00	
			c) MACHINERY/ HIRE CHARGES:					
			Hot mix Plant -120 TPH capacity	hour	3.000	15000.00	45000.00	P&M-095
			Hot mix Plant 100 TPH Capacity	hour	3.000	13000.00	39000.00	P&M-096
			Paver finisher Hydrostatic with sensor control 100 TPH	hour	6.000	3259.29	19555.74	P&M-034
			Generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity (incl POL)	hour	6.000	1398.23	8389.38	P&M-017
			Smooth Wheeled Roller 8 to 10 tonne for initial break down rolling.(6*0.65)	hour	3.900	561.95	2191.61	P&M-044
			Vibratory roller 8 to 10 tonne for intermediate rolling.(6*0.65)	hour	3.900	600.00	2340.00	P&M-062 (A)
			Tandem Road Roller, Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65)	hour	3.900	1393.81	5435.86	P&M-045
			d) Labour					
			Mate	each	0.840	400.00	336.00	L-12
			Beldar	each	14.000	310.00	4340.00	L-20

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction					
			Skilled Beldar (for floor rubbing etc.) for checking line & levels	each	5.000	442.00	2210.00	L-15
			Other Costs					
			e) GST @ 12 % on (a+b+c+d)				166956.98	
			f) Overhead charges @ 10 % on (a+b+c+d+e)				155826.52	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				171409.17	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				18855.01	
			Cost for 191 cum(450 Tonne)				1904355.87	
			Cost per cum (Per Tonne).				9970.45	
						Say	**9970.50**	
5.30	16.57.4		Providing and laying Bituminous concrete using crushed stone aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site by tippers, laying with paver finisher equiped with electronic sensor to the required grade, level and alignment and rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction and density as per specification, complete and as per directions of Engineer-in-Charge.					
		(a)	**440/50 mm compacted thickness with bitumen of grade CRMB-60 @ 5.5% (percentage by weight of total mix) and lime filler @ 3% (percentage by weight of Aggregate) prepared in Batch Type Hot Mix Plant of 100-120 TPH capacity.**					
			Details of cost for 191 cum (450 tonnes)					
			a) Material					
			Modified Bitumen Refinary produced CRMB - 60, '@5.50% (percentage by weight of Aggregate Total weight of mix = 450 tonnes Weight of bitumen = 24.75 tonnes Weight of aggregate = 450 -24.75 = 425.25 tonnes Taking density of aggregate = 1.5 tonne/cum Volume of aggregate =425.25/1.5 = 283.50cum Grading - II/19 mm (Nominal Size) 13.2 - 10mm size = 30% of 283.50 = 85.05 cum 10 - 5mm size = 25% of 283.50 = 70.88 cum 5mm and below = 42% of 283.50 = 119.07 cum	tonne	24.750	30536.00	755766.00	M-078 (B)
			Stone Aggregate (Single size) : 12.5 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1895.58	81036.05	M-052
			Stone Aggregate (Single size) : 10 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1951.33	83419.36	M-051
			Stone Aggregate (Single size) : 10 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1951.33	69155.14	M-051
			Stone Aggregate (Single size) : 06 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1939.82	68747.22	M-050
			Stone chippings/ screenings 4.75 mm nominal size (Qty = 283.5 * 40 /100)	cum	113.400	1059.29	120123.49	M-041

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Dry hydrated lime (factory made)	quintal	127.600	290.00	37004.00	M-200
			b) Transport					
			Carriage of Bitumen	tonne	24.750	0.00	0.00	
			Carriage of Stone aggregate below 40 mm nominal size	cum	275.000	0.00	0.00	
			Lime Filler @ 2% (percentage by weight of aggregate)					
			Carriage of Lime (consitering density of lime as 1.29 T per cum) V = 12.758/1.29 = 9.89 cum	cum	9.890	0.00	0.00	
			Tipper 10 tonne capacity (Taken 10 km average lead) 450 x 10 = 4500 tonne Km Tipper -5 Cum	tonne/ km	4,500.000	0.00	0.00	
			Add 10 per cent of cost of carriage to cover cost of loading and unloading		10 per cent of cost of carriage		0.00	
			c) MACHINERY/ HIRE CHARGES:					
			Hot mix Plant -120 TPH capacity	hour	3.000	15000.00	45000.00	P&M-095
			Hot mix Plant 100 TPH Capacity	hour	3.000	13000.00	39000.00	P&M-096
			Paver finisher Hydrostatic with sensor control 100 TPH	hour	6.000	3259.29	19555.74	P&M-034
			Generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Front end loader 1 cum bucket capacity (incl POL)	hour	6.000	1398.23	8389.38	P&M-017
			Smooth Wheeled Roller 8 to 10 tonne for initial break down rolling.(6*0.65)	hour	3.900	561.95	2191.61	P&M-044
			Vibratory roller 8 to 10 tonne for intermediate rolling.(6*0.65)	hour	3.900	600.00	2340.00	P&M-062 (A)
			Tandem Road Roller, Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65)	hour	3.900	1393.81	5435.86	P&M-045
			d) Labour					
			Mate	each	0.840	354.00	297.36	L-12
			Beldar working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	each	14.000	310.00	4340.00	L-13
			Skilled Beldar (for floor rubbing etc.) for checking line & levels	each	5.000	442.00	2210.00	L-15
			Other Costs					
			e) GST @ 12 % on (a+b+c+d)				162010.27	
			f) Overhead charges @ 10 % on (a+b+c+d+e)				151209.58	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				166330.54	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				18296.36	
			Cost for 191 cum(450 Tonne)				1847932.30	
			Cost per cum (Per Tonne).				9675.04	
						Say	**9675.00**	

Chapter – 6

CEMENT CONCRETE PAVEMENT

Preamble:

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

2 While tippers have been provided for tranportation of dry lean cement concrete and rolled cement concrete, transit truck mixers have been considered for the cement concrete pavement.

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

4 Cement 43 grade has been catered for the cement concrete pavement i.e. for pavement quality concrete to get higher strength. However, for dry lean concrete, cement of 33 grade may be preferred.

5 While a slip form paver has been catered for the top layer of concrete pavement, a mechanical paver has been provided for dry lean and roller cement concrete.

6 Materials provided in the rate analysis are for estimating prupose. Exact quantity of materials be determined for the job mix formula.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in 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	354.00	396.48	L-12
			Mazdoor skilled	day	6.000	442.00	2652.00	L-15
			Mazdoor	day	22.000	310.00	6820.00	L-13
			b) Machinery					
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	4722.12	28332.72	P&M-068
			Electric generator 100 KVA	hour	6.000	849.56	5097.36	P&M-080
			Paver with electronic sensor	hour	6.000	3259.29	19555.74	P&M-034
			Vibratory roller 8-10 t capacity	hour	8.000	733.63	5869.04	P&M-059
			Water tanker6 KL capacity	hour	8.000	544.25	4354.00	P&M-060
			Tipper	tonne.km	990 x L	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			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	1812.00	733860.00	M-052 and M-054
			Coarse Sand as per IS: 383 @ 0.45 cum/cum of concrete	cum	203.000	601.77	122159.31	M-004
			Cement @ 150 kg/cum of concrete	tonne	67.500	9053.98	611143.65	M-081
			Cost of water	KL	48.000	67.26	3228.48	M-189
			d) GST @ 12 % on (a+b+c)				186222.98	
			e) Overhead charges @ 10 % on (a+b+c+d)				173808.11	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				191188.93	
			g) Cess @ 1% on (a+b+c+d+e+f)				21030.78	
			Cost for 205 cum = a+b+c+d+e+f+g				2124108.96	
			Rate per cum = (a+b+c+d+e+f+g)/450				4720.24	
						say	***4720.00***	
		Note	Quantity provided for aggregate is for estimating purpose. Exact quantity shall be as per mix design.					
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, for M40 Grade having minimum 28 days flexural strength of 4.5 Mpa, using approved admixtures, 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.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Unit = cum					
			Taking output = 1050 cum (2415 tonne)					
			a) Labour					
			Mate	day	2.000	354.00	708.00	L-12
			Mazdoor skilled	day	15.000	442.00	6630.00	L-15
			Mazdoor	day	35.000	310.00	10850.00	L-13
			b) Machinery					
			Road Sweeper @ 1250 sqm per hour	hour	2.800	433.63	1214.16	P&M-031
			Front end loader 1 cum bucket capacity	hour	18.000	1398.23	25168.14	P&M-017
			Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6.000	3534.51	21207.06	P&M-067
			Electric generator 250 KVA	hour	6.000	1012.39	6074.34	P&M-081
			Slip form paver with electronic sensor	hour	6.000	3259.29	19555.74	P&M-006
			Water tanker6 KL capacity	hour	36.000	544.25	19593.00	P&M-060
			Transit truck agitator 5 cum capacity.	tonne.km	2415xL	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			Concrete joint cutting machine .	hour	12.000	125.66	1507.92	P&M-083
			Texturing machine .	hour	12.000	269.91	3238.92	P&M-088
			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	1812.00	1712340.00	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	601.77	284637.21	M-004
			Cement 43 grade @ 400 kg/cum of concrete	tonne	414.000	9053.98	3748347.72	M-081
			32 mm mild steel dowel bars of grade S 240	tonne	9.450	59823.01	565327.44	M-126
			16 mm deformed steel tie bars of grade S 415	tonne	1.170	59823.01	69992.92	M-082
			Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	30.09	110580.75	M-164
			Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	16.330	613.27	10014.70	M-141
			Joint sealant	kg	875.000	337.17	295023.75	M-120
			Sealant primer	kg	116.670	278.76	32522.93	M-097
			Plastic sheath,1.25 mm thick for dowel bars	sqm	46.670	0.97	45.27	M-138
			Curing compound	liter	1850.000	54.60	101010.00	M-090
			Super plastisizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	61.06	126394.20	M-180
			Cost of water	KL	216.000	67.26	14528.16	M-189
			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.				70707.65	
			d) GST @ 12 % on (a+b+c)				870866.40	
			e) Overhead charges @ 10 % on (a+b+c+d)				812808.64	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				894089.50	
			g) Cess @ 1% on (a+b+c+d+e+f)				98349.85	
			Cost for 1050cum = a+b+c+d+e+f+g				9933334.37	
			Rate per cum = (a+b+c+d+e+f+g)/1050				9460.32	
						say	***9460.00***	
		Note	The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.					
6.3	*603*		**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.					
			Unit = cum					
			Taking output = 450 cum (990 tonne)					
			a) Labour					
			Mate	day	1.200	354.00	424.80	L-12
			Mazdoor skilled	day	7.000	442.00	3094.00	L-15
			Mazdoor	day	23.000	310.00	7130.00	L-13
			b) Machinery					
			Front end loader 1 cum bucket capacity	hour	6.000	1398.23	8389.38	P&M-017
			Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	4722.12	28332.72	P&M-068
			Electric generator 100 KVA	hour	6.000	849.56	5097.36	P&M-080
			Paver with electronic sensor @ 75 cum/hr.	hour	6.000	3259.29	19555.74	P&M-034
			Vibratory roller 8-10 t capacity	hour	8.000	733.63	5869.04	P&M-059
			Water tanker with 5 km lead 6 KL capacity	hour	8.000	544.25	4354.00	P&M-060
			Tipper	tonne.km	990xL	7.65	0.00	Lead =0 km & P&M-058
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				0.00	
			c) Material					
			Crushed stone coarse aggregates of 25mm and 12.5mm nominal size @ 0.90 cum/cum of concrete conforming to clause 602.2.3.	cum	405.000	1812.00	733860.00	M-052 and M-054
			Sand as per IS: 383 and conforming to clause 602.2.3 @ 0.45 cum/cum of concrete	cum	203.000	601.77	122159.31	M-004
			Cement @ 200 kg/cum of concrete	tonne	90.000	9053.98	814858.20	M-081
			Cost of water	KL	48.000	67.26	3228.48	M-189
			d) GST @ 12 % on (a+b+c)				210762.36	
			e) Overhead charges @ 10 % on (a+b+c+d)				196711.54	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				216382.69	
			g) Cess @ 1% on (a+b+c+d+e+f)				23802.10	
			Cost for 450cum = a+b+c+d+e+f+g				2404011.72	
			Rate per cum = (a+b+c+d+e+f+g)/450				5342.25	
						say	***5342.00***	
		Note	The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.					

Chapter–8

TRAFFIC SIGNS, MARKINGS AND OTHER APPURTENANCES

Preamble:

1 Rate analysis for fencing has been done for two different heights, i.e. 1.20 m and 1.80 m. Any of these two can be adopted depending upon a particular situation and design.

2 Rate analysis for fencing provides for three types as under :

a) Barbed wire fencing

b) Welded steel wire fencing with mesh size of 75X25 mm

c) Welded steel wire fencing with mesh size of 75X50 mm

3 Kerbstone laying and road marking has been provided for laying by mechanical means.

4 Back filling of foundatin of boudary pillars has been proposed with stone spalls, tightly packed and compacted.

5 The item pertaining to road traffic signals has not been analysed as this is a specialised work and rates can be obtained from firms having specialisation for design and installation of this work.

6 For metal beam crash barrier, a 'W' shaped beam of size 311 x 83 mm flange width made with structural steel corrugated plate 3 mm thick and having a length of 4.5 m has been provided, over a channel post of 150 x 75 x 5 mm with a spacer of channel section 150 x 75 x 5 mm, 330 mm long.

7 Printing of letters and signs is required to be measured and paid separately. A separate rate for lettering has been prepared and included in this chapter for this purpose.

8 Two support have been provided for direction and place identification signs where size is more than 0.9 sqm. Only one support is provided for size upto 0.9 sqm.

9 The traffic signs proposed are of retro-reflectorised type made of encapsulated lens type reflective sheeting fixed over alumunium sheeting as per Clause 801.3 and installation.

10 The size, location of traffic signs shall be as per IRC:67.

11 The rates for rigid, semi-regid and flexible crash barriers have been included.

12 Provision has been made for a crane for installation of overhead signs.

13 Separate rates have been derived for Tubular steel railing with RCC posts and MS steel posts.

14 The organisation and financial aspects are required to be finalised in consultation with administrative and traffic authorities.

15 The rate for message display board for gantry mounted variable message sign is required to be ascertained from the market, this being a commercially produced item by specialised firms.

16 The rate analysis for traffic impact attenuators at abutments and piers have been inlcuded.

17 In the case of road signs and direction boards the depth of foundation and quantity of cement concrete provided in the rate analysis are indicative. These may be suitably increased in areas of higher wind velocities like coastal areas.

18 **Ducts for Utility Services Along and Across the Expressway/Highways :**

The running metre cost of duct along the road including inspection chambers (where applicable) or across the road will depend upon the approved design. The various item involved are earthen work, plain cement concrete, brick stone masonry, reinforcement cement concrete, form work, steel reinforcement, laying of pipe line (where duct is of pipe) and cast iron/RCC cover for the inspection chamber. The rate for these items are available under respective clauses which can be applied and running metre cost of duct worked out as per the approved design and drawing for particular situations. In case cast iron cover for the inspection chamber, the rate can be ascertained from the market for the size provided in the design and approved drawings.

19 **Noise Barriers :**

Noise barrier can be provided in the form of a brick wall of a suitable height as per the site requirement and approved design. The items involved for the construction of this barrier like earthwork, brick masonry, plain cement concrete, etc. are available in the Data Book, which can be applied to arrive at the cost of noise barrier based on the design adopted.

Alternatively, wherever space permits, cluster of trees, shrubs and plants can be grown by the road side 6 m away from the edge of the roadway. This will intercept the annoying sound waves and fumes from road vehicles.

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in 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	354.00	254.88	L-12
			Mason	day	2.000	442.00	884.00	L-11
			Mazdoor	day	16.000	310.00	4960.00	L-13
			b) Machinery					
			Kerb casting machine @ 60 metres/hour	hour	6.000	377.88	2267.28	P&M-029
			Concrete mixer 0.48/0.28 cum capacity	hour	12.000	269.91	3238.92	P&M-009
			Water tanker6 KL capacity	hour	5.000	544.25	2721.25	P&M-060
			c) Material					
			Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	1784.07	38874.89	M-053
			Coarse sand 30 per cent	cum	10.900	601.77	6559.29	M-005
			Cement 11 per cent	tonne	5.700	9053.98	51607.69	M-081
			Cost of water	KL	30.000	67.26	2017.80	M-189
			d) GST @ 12 % on (a+b+c)				13606.32	
			e) Overhead charges @ 10 % on (a+b+c+d)				12699.23	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13969.16	
			g) Cess @ 1% on (a+b+c+d+e+f)				1536.61	
			Cost for 360 meter = a+b+c+d+e+f+g				155197.32	
			Rate per metre = (a+b+c+d+e+f+g)/360				431.10	
						say	***431.00***	
		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	354.00	42.48	L-12
			Mason	day	1.000	442.00	442.00	L-11
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Kerb casting machine @ 60 metres/hour	hour	6.000	377.88	2267.28	P&M-029

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Concrete batching and mixing plant @ 15 cum/hr.	hour	1.600	2787.61	4460.18	P&M-003
			Water tanker6 KL capacity	hour	5.000	544.25	2721.25	P&M-060
			Tipper 5.5 cum capacity	hour	6.000	779.65	4677.90	P&M-048
			c) Material					
			Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	1784.07	38874.89	M-053
			Coarse sand 30 per cent	cum	10.900	601.77	6559.29	M-004
			Cement 11 per cent	tonne	5.700	9053.98	51607.69	M-081
			Cost of water	KL	30.000	67.26	2017.80	M-189
			d) GST @ 12 % on (a+b+c)				13714.89	
			e) Overhead charges @ 10 % on (a+b+c+d)				12800.57	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				14080.62	
			g) Cess @ 1% on (a+b+c+d+e+f)				1548.87	
			Cost for 360 meter = a+b+c+d+e+f+g				156435.71	
			Rate per metre = (a+b+c+d+e+f+g)/360				434.54	
						say	***435.00***	
8.2	408		**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 PCCM20 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**					
			Unit = Running metre					
			Taking output = 300 metre length					
			Cement Concrete					
			Cement concrete of grade M20= 17.48 cum					
			Cement concrete of grade M10 for base = 23.18 cum					
			Total Concrete = **40.66 cum**					
			a) Labour					
			Mate	day	0.720	354.00	254.88	L-12
			Mason	day	2.000	442.00	884.00	L-11
			Mazdoor	day	16.000	310.00	4960.00	L-13
			b) Machinery					
			Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	377.88	2267.28	P&M-029
			Concrete mixer 0.48/0.28	hour	16.000	269.91	4318.56	P&M-009
			Water tanker6 KL capacity	hour	6.000	544.25	3265.50	P&M-060
			c) Material					
			Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	1784.07	65279.12	M-053
			Coarse sand 30 per cent	cum	18.300	601.77	11012.39	M-005
			Cement 10 per cent	tonne	9.010	9053.98	81576.36	M-081
			Cost of water	KL	36.000	67.26	2421.36	M-189
			d) GST @ 12 % on (a+b+c)				21148.73	
			e) Overhead charges @ 10 % on (a+b+c+d)				19738.82	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				21712.70	
			g) Cess @ 1% on (a+b+c+d+e+f)				2388.40	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Cost for 300 meter = a+b+c+d+e+f+g				241228.10	
			Rate per metre = (a+b+c+d+e+f+g)/300				804.09	
						say	***804.00***	
8.2		**B**	**Using Concrete Batching and Mixing Plant**					
			Unit = Running metre					
			Taking output = 300 metre length					
			Cement Concrete					
			Cement concrete of grade M20= 17.48 cum					
			Cement concrete of grade M10 for base = 23.18 cum					
			Total Concrete = **40.66 cum**					
			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Mason	day	1.000	442.00	442.00	L-11
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	377.88	2267.28	P&M-029
			Concrete batching and mixing plant @ 15 cum/hr.	hour	2.700	2787.61	7526.55	P&M-003
			Water tanker6 KL capacity	hour	6.000	544.25	3265.50	P&M-060
			Tipper of 5.5 cum capacity	hour	6.000	779.65	4677.90	P&M-048
			c) Material					
			Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	1784.07	65279.12	M-053
			Coarse sand 30 per cent	cum	18.300	601.77	11012.39	M-004
			Cement 10 per cent	tonne	9.010	9053.98	81576.36	M-081
			Cost of water	KL	36.000	67.26	2421.36	M-189
			d) GST @ 12 % on (a+b+c)				21495.71	
			e) Overhead charges @ 10 % on (a+b+c+d)				20062.67	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				22068.93	
			g) Cess @ 1% on (a+b+c+d+e+f)				2427.58	
			Cost for 300 meter = a+b+c+d+e+f+g				245185.83	
			Rate per metre = (a+b+c+d+e+f+g)/300				817.29	
						say	***817.00***	
8.3	**801**		**Printing New Letter and Figures of any Shade**					
			Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade					
		(i)	**Hindi** (Matras commas and the like not to be measured and paid for Half letter shall be counted as half)					
			Details for 100 letters of 16 cm height i.e. 1600 cm					
			Unit = per cm height per letter					
			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Painter	day	2.000	442.00	884.00	L-18
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Material					
			Paint	Litre	0.700	323.01	226.11	M-131
			c) GST @ 12 % on (a+b)				175.51	
			d) Overhead charges @ 10 % on (a+b+c)				163.81	
			e) Contractor's profit @ 10 % on (a+b+c+d)				180.19	
			f) Cess @ 1% on (a+b+c+d+e)				19.82	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Cost for 1600 cm = a+b+c+d+e+f				2001.92	
			Rate per cm height per letter = (a+b+c+ d+e+f)/1600				1.25	
						say	***1.30***	
8.3		**(ii)**	**English and Roman**					
			Hyphens and the like not to be measured and paid for					
			Detail for 100 letters of 16 cm height. i.e.1600 cm					
			Unit = per cm height per letter					
			a) Labour					
			Mate	day	0.070	354.00	24.78	L-12
			Painter Ist class	day	1.250	442.00	552.50	L-18
			Mazdoor	day	0.500	310.00	155.00	L-13
			b) Material					
			Paint	Litre	0.500	323.01	161.51	M-131
			c) GST @ 12 % on (a+b)				107.25	
			d) Overhead charges @ 10 % on (a+b+c)				100.10	
			e) Contractor's profit @ 10 % on (a+b+c+d)				110.11	
			f) Cess @ 1% on (a+b+c+d+e)				12.11	
			Cost for 1600 cm = a+b+c+d+e+f				1223.36	
			Rate per cm height per letter = (a+b+c +d+e+f)/1600				0.76	
						say	***0.80***	
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	0.220	355.00	78.10	Item No. 3.13
			ii) Cement concrete M15 grade	cum	0.120	7876.00	945.12	Item 12.8 (A)
			iii) Painting angle iron post two coats	sqm	0.430	95.00	40.85	Item 8.9
			(Including GST,OH,CP &Cess of i,ii & iii)					
			a) Labour (For fixing at site)					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor	day	0.200	310.00	62.00	L-13
			b) Material					
			Mild steel angle iron 75 mm x 75 mm x 6 mm,2.85 metres long	kg	19.000	48.31	917.89	M-179 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size 0.9 sqm	sqm	0.900	161.95	145.76	M-061
			Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.					
			c) Machinery					
			Tractor-trolley	hour	0.020	476.11	9.52	P&M-053
			d) GST @ 12 % on (a+b+c)				136.65	
			e) Overhead charges @ 10 % on (a+b+c+d)				127.54	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				140.29	
			g) Cess @ 1% on (a+b+c+d+e+f)				15.43	
			Cost for 0.9 sqm =i+ii+iii+ a+b+c+d+e+f+g				2622.69	
			Rate per sqm (for sign having area upto 0.9 sqm) = (I+ii+iii+a+b+c+d+e+f+g)/0.90				2914.10	
						say	***2914.00***	
		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	355.00	152.65	Item No. 3.13
			ii) Cement concrete M15 grade	cum	0.240	7876.00	1890.24	Item 12.8 (A)
			iii) Painting angle iron post 2 coats	sqm	0.860	95.00	81.70	Item 8.9
			(Including GST,OH,CP &Cess of i,ii & iii)					
			a) Labour (For fixing at site)					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor	day	0.300	310.00	93.00	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	48.31	1835.78	M-179 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting	sqm	1.500	161.95	242.93	M-061
			Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.					
			c) Machinery					
			Tractor-trolley	hour	0.020	476.11	9.52	P&M-053
			d) GST @ 12 % on (a+b+c)				262.17	
			e) Overhead charges @ 10 % on (a+b+c+d)				244.69	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				269.16	
			g) Cess @ 1% on (a+b+c+d+e+f)				29.61	
			Cost for 1.5 sqm =I+ii+ii+ a+b+c+d+e+f+g				5114.99	
			Rate per sqm (for sign having area more than 0.9 sqm) = i+ii+iii+a+b+c+d+e+f+g)/1.50				5683.32	
						say	***5683.00***	
		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					

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in 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	354.00	42.48	L-12
			Painter	day	2.000	442.00	884.00	L-18
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Material					
			Paint conforming to requirement of clause 803.3.	Litre	6.000	267.26	1603.56	M-132
			Add for scaffolding @ 1 per cent of labour cost where required				16.04	
			Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				142.00	
			c) GST @ 12 % on (a+b)				359.77	
			d) Overhead charges @ 10 % on (a+b+c)				335.79	
			e) Contractor's profit @ 10 % on (a+b+c+d)				369.36	
			f) Cess @ 1% on (a+b+c+d+e)				40.63	
			Cost for 40 sqm = a+b+c+d+e+f				4103.63	
			Rate per sqm = (a+b+c+d+e+f)/40				102.59	
						say	***103.00***	
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	354.00	10.62	L-12
			Painter	day	0.450	442.00	198.90	L-18
			Mazdoor	day	0.250	310.00	77.50	L-13
			b) Material					
			Paint ready mixed approved brand.	Litre	1.250	323.01	403.76	M-131
			Add @ 1 per cent on cost of material for scaffolding				4.04	
			Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				34.54	
			c) GST @ 12 % on (a+b)				87.52	
			d) Overhead charges @ 10 % on (a+b+c)				81.69	
			e) Contractor's profit @ 10 % on (a+b+c+d)				89.86	
			f) Cess @ 1% on (a+b+c+d+e)				9.88	
			Cost for 10 sqm = a+b+c+d+e+f				998.31	
			Rate per sqm= (a+b+c+d+e+f)/10				99.83	
						say	***100.00***	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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	354.00	10.62	L-12
			Painter	day	0.500	442.00	221.00	L-18
			Mazdoor	day	0.200	310.00	62.00	L-13
			b) Material					
			Paint ready mixed of approved brand.	Litre	1.500	323.01	484.52	M-131
			Add @ 1 per cent on cost of material for scaffolding				4.85	
			Add @ 5 per cent cost of labour and materials to prepare the surface by filling minuts roughness on the surface and priming the surface before laying 2 coats of painting.				38.91	
			c) GST @ 12 % on (a+b)				98.63	
			d) Overhead charges @ 10 % on (a+b+c)				92.05	
			e) Contractor's profit @ 10 % on (a+b+c+d)				101.26	
			f) Cess @ 1% on (a+b+c+d+e)				11.14	
			Cost for 10 sqm = a+b+c+d+e+f				1124.98	
			Rate per sqm= (a+b+c+d+e+f)/10				112.50	
						say	***113.00***	
8.11	803		**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work**					
			Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control					
		(i)	**Over 10 cm in width**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.090	354.00	31.86	L-12
			Painter	day	0.550	442.00	243.10	L-18
			Mazdoor	day	1.550	310.00	480.50	L-13
			b) Material					
			Road marking Paint as per IS :164	Litre	1.480	267.26	395.54	M-132
			c) GST @ 12 % on (a+b)				138.12	
			d) Overhead charges @ 10 % on (a+b+c)				128.91	
			e) Contractor's profit @ 10 % on (a+b+c+d)				141.80	
			f) Cess @ 1% on (a+b+c+d+e)				15.60	
			Cost for 10 sqm = a+b+c+d+e+f				1575.43	
			Rate per sqm= (a+b+c+d+e+f)/10				157.54	
						say	***158.00***	
8.11		(ii)	**Up to 10 cm in width**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.070	354.00	24.78	L-12
			Painter	day	0.350	442.00	154.70	L-18

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Mazdoor	day	1.350	310.00	418.50	L-13
			b) Material					
			Road marking paint	Litre	1.480	267.26	395.54	M-132
			c) GST @ 12 % on (a+b)				119.22	
			d) Overhead charges @ 10 % on (a+b+c)				111.27	
			e) Contractor's profit @ 10 % on (a+b+c+d)				122.40	
			f) Cess @ 1% on (a+b+c+d+e)				13.46	
			Cost for 10 sqm = a+b+c+d+e+f				1359.87	
			Rate per sqm= (a+b+c+d+e+f)/10				135.99	
						say	***136.00***	
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	354.00	21.24	L-12
			Painter Ist class	day	0.300	442.00	132.60	L-18
			Mazdoor	day	1.250	310.00	387.50	L-13
			b) Material					
			Road marking paint	Litre	0.900	267.26	240.53	M-132
			c) GST @ 12 % on (a+b)				93.82	
			d) Overhead charges @ 10 % on (a+b+c)				87.57	
			e) Contractor's profit @ 10 % on (a+b+c+d)				96.33	
			f) Cess @ 1% on (a+b+c+d+e)				10.60	
			Cost for 10 sqm = a+b+c+d+e+f				1070.19	
			Rate per sqm= (a+b+c+d+e+f)/10				107.02	
						say	***107.00***	
8.12		(ii)	**Up to 10 cm in width**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.070	354.00	24.78	L-12
			Painter Ist class	day	0.350	442.00	154.70	L-18
			Mazdoor	day	1.350	310.00	418.50	L-13
			b) Material					
			Road marking Paint	Litre	0.900	267.26	240.53	M-132
			c) GST @ 12 % on (a+b)				100.62	
			d) Overhead charges @ 10 % on (a+b+c)				93.91	
			e) Contractor's profit @ 10 % on (a+b+c+d)				103.30	
			f) Cess @ 1% on (a+b+c+d+e)				11.36	
			Cost for 10 sqm = a+b+c+d+e+f				1147.70	
			Rate per sqm= (a+b+c+d+e+f)/10				114.77	
						say	***115.00***	
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.**					

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Unit = sqm					
			Taking output = 600 sqm					
			a) Labour					
			Mate	day	0.030	354.00	10.62	L-12
			Mazdoor	day	0.750	310.00	232.50	L-13
			b) Machinery					
			Road marking machine @ 60 sqm per hour	hour	10.000	112.39	1123.90	P&M-043
			Tractor-trolley	hour	0.500	476.11	238.06	P&M-053
			c) Material					
			Hot applied thermoplastic compound	Litre	1500.000	199.12	298680.00	M-118
			Reflectorising glass beads	kg	150.000	231.86	34779.00	M-152
			d) GST @ 12 % on (a+b+c)				40207.69	
			e) Overhead charges @ 10 % on (a+b+c+d)				37527.18	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				41279.90	
			g) Cess @ 1% on (a+b+c+d+e+f)				4540.79	
			Cost for 600 sqm = a+b+c+d+e+f+g				458619.64	
			Rate per sqm = a+b+c+d+e+f+g)/600				764.37	
						say	***764.00***	
		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.					
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	7876.00	18508.60	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	22.080	99.10	2188.13	Item 13.6/1000
			c) Excavation in soil for foundation	cum	1.680	355.00	596.40	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	9.850	98.00	965.30	Item 8.8
			e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	0.80	1440.00	Item 8.3
			(Including GST,OH,CP &Cess of a,b,c,d & e)					
			Transportation and fixing					
			f) Labour					
			Mate	day	0.260	354.00	92.04	L-12
			Mason	day	0.600	442.00	265.20	L-11
			Mazdoor including loading/unloading	day	6.000	310.00	1860.00	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	476.11	2856.66	P&M-053
			h) GST @ 12 % on (f+g)				608.87	
			i) Overhead charges @ 10 % on (f+g+h)				568.28	
			j) Contractor's profit @ 10 % on (f+g+h+i)				625.11	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			k) Cess @ 1% on (f+g+h+i+j)				68.76	
			Cost for 6 Nos. 5th km stone = a+b+c+ d+e +f+g+h +i +j+k				30643.35	
			Rate for each 5th km stone = (a+b+c+d+e +f+g+h+i+j+k)/6				5107.23	
						say	***5107.00***	
8.14	**(ii)**	**Ordinary kilometer stone (precast)**						
			Unit = Nos.					
			Taking output = 14 Nos.					
			a) M-15 grade of concrete	cum	3.770	7876.00	29692.52	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	26.320	99.10	2608.31	Item 13.6/1000
			c) Excavation in soil for foundation	cum	2.770	355.00	983.35	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	11.410	98.00	1118.18	Item 8.8
			e) Lettering on km post (average 12 letters of 10 cm height each)	per cm per letter	1680.000	0.80	1344.00	Item 8.3
			(Including GST,OH,CP &Cess of a,b,c,d & e)					
			Transportation and fixing					
			f) Labour					
			Mate	day	0.320	354.00	113.28	L-12
			Mason	day	1.000	442.00	442.00	L-11
			Mazdoor	day	7.000	310.00	2170.00	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	476.11	2856.66	P&M-053
			h) GST @ 12 % on (f+g)				669.83	
			i) Overhead charges @ 10 % on (f+g+h)				625.18	
			j) Contractor's profit @ 10 % on (f+g+h+i)				687.70	
			k) Cess @ 1% on (f+g+h+i+j)				75.65	
			Cost for 14 Nos. ordinary km stone = (a+b+ c +d+e+f+g+h+i+j+k)				43386.66	
			Rate for each ordinary km stone = (a+b+c +d+e+f+g+h+i+j+k)/14				3099.05	
						say	***3099.00***	
8.14	**(iii)**	**Hectometer stone (precast)**						
			Unit = Nos.					
			Taking output = 33 Nos.					
			a) M-15 grade of concrete	cum	1.580	7876.00	12444.08	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	66.000	99.10	6540.60	Item 13.6/1000
			c) Excavation in soil for foundation	cum	1.390	355.00	493.45	Item No. 3.13
			d) Painting two coats on concrete surface	sqm	6.270	98.00	614.46	Item 8.8
			e) Lettering on km post (average 1 letter of 10 cm height each)	per cm per letter	330.000	0.80	264.00	Item 8.3
			(Including GST,OH,CP &Cess of a,b,c,d & e)					

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Transportation and fixing					
			f) Labour					
			Mate	day	0.340	354.00	120.36	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	7.000	310.00	2170.00	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	476.11	2856.66	P&M-053
			h) GST @ 12 % on (f+g)				697.20	
			i) Overhead charges @ 10 % on (f+g+h)				650.72	
			j) Contractor's profit @ 10 % on (f+g+h+i)				715.79	
			k) Cess @ 1% on (f+g+h+i+j)				78.74	
			Cost for 33 Nos. Hectometer stone = (a+b +c +d+e+f+ g+h+i+j+k)				28309.06	
			Rate for each Hectometer stone = (a+b +c +d+e+f+ g+h+i+j+k) 33				857.85	
						say	***858.00***	
		Note	The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective chapters.					
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	7876.00	9845.00	Item 12.8 (A)
			b) Steel reinforcement	kg	79.800	99.10	7908.18	Item 13.6/1000
			c) Excavation in soil	cum	10.720	355.00	3805.60	Item No. 3.13
			d) Lettering, each 10 cm high	per letter per cm high	2280.000	0.80	1824.00	Item 8.3
			(Including GST,OH,CP &Cess of a,b,c & d)					
			Transportation and fixing					
			e) Labour					
			Mate	day	0.570	354.00	201.78	L-12
			Mazdoor	day	14.250	310.00	4417.50	L-13
			f) Machinery					
			Tractor-trolley	hour	6.000	476.11	2856.66	P&M-053
			g) Material					
			Stone spall	cum	11.970	446.02	5338.86	M-008
			h) GST @ 12 % on (e+f+g)				1537.78	
			i) Overhead charges @ 10 % on (e+f+g+h)				1435.26	
			j) Contractor's profit @ 10 % on (e+f+g+h+i)				1578.78	
			k) Cess @ 1% on (f+g+h+i+j)				173.67	
			Cost for 57 Nos. boundary pillar = (a+b +c+d +e+ f+g+h+i+j+k)				40923.07	
			Rate for each boundary pillar = (a+b+c+d+e+ f+g+h+i+j+k)/57				717.95	
						say	***718.00***	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		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.					
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	354.00	31.86	L-12
			Blacksmith	day	0.250	442.00	110.50	L-02
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Material					
			Barbed wire 335 metres length @ 9.38 kg per 100 metres	kg	31.420	100.00	3142.00	M-063
			MS angle iron 40 mm x 40mm x 6 mm, 23 metres in length @ 3.5 kg per metre	kg	80.500	48.31	3888.96	M-179 /1000
			Add for GI staple binding wire, drilling holes etc. @ 2 per cent of the cost of material				140.62	
			c) Painting					
			Applying two coats of painting on exposed surface of angle iron posts (Rate as per item no. 8.9)	sqm	2.110	95.00	200.45	Item 8.9
			d) GST @ 12 % on (a+b)				952.07	
			e) Overhead charges @ 10 % on (a+b+d)				888.60	
			f) Contractor's profit @ 10 % on (a+b+d+e)				977.46	
			g) Cess @ 1% on (a+b+d+e+f)				107.52	
			Cost for 30 metres fencing = a+b+c+d+e+f+g				11060.04	
			Rate per metre = (a+b+c+d+e+f+g)/30				368.67	
						say	***369.00***	
		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.					
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					

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Blacksmith	day	0.400	442.00	176.80	L-02
			Mazdoor	day	2.500	310.00	775.00	L-13
			b) Material					
			Barbed wire 428 metres length @ 9.38 kg per 100 metres	kg	40.150	100.00	4015.00	M-063
			MS angle iron 50 mm x 50 mm x 6 mm,33.8 metres in length @ 4.5 kg per metre	kg	152.000	48.31	7343.12	M-179 /1000
			Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material				227.16	
			c) Painting					
			Applying two coats of painting on exposed surface of angle iron posts (Including GST,OH,CP &Cess)	sqm	3.960	95.00	376.20	Item 8.9
			d) GST @ 12 % on (a+b)				1509.55	
			e) Overhead charges @ 10 % on (a+b+d)				1408.91	
			f) Contractor's profit @ 10 % on (a+b+d+e)				1549.80	
			g) Cess @ 1% on (a+b+d+e+f)				170.48	
			Cost for 30 metres fencing = a+b+c+d+e+f+g				17594.50	
			Rate per metre fencing = (a+b+c +d+e+f+g)/30				586.48	
						say	***586.00***	

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.

8.19 Suggestive

Fencing With Welded Steel Wire Fabric 75 mm x 50 mm

Providing 1.20 metre high fencing with angle iron posts 50 mm x 50 mm x 6 mm at 3 metre center to center with 0.40 metre embedded in M15 grade cement concrete, corner, end and every 10th post to be strutted, provided with welded steel wire fabric of 75 mm x 50 mm mesh or 75 mm x 25 mm mesh and fixed to iron posts by flat iron 50 x 5 mm and bolts etc. complete in all respects.

Unit = Running metre

Taking output = 30 m

			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Welder	day	1.000	442.00	442.00	L-02
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Material					
			i) Angle iron for posts 50 x 50 x 6 mm	kg	106.000	48.31	5120.86	M-179 /1000
			ii) Runner flat 50 x 5 mm	kg	26.000	48.31	1256.06	M-179 /1000
			iii) Welded steel wire fabric 75x50 mm mesh @ 4 kg/sqm,4 x 30 x 1.2 + 5 per cent wastage	kg	151.000	67.26	10156.26	M-191
			OR					
			Welded steel wire fabric 75 x 25 mm mesh @ 7.75 kg/sqm, 7.75 x 30 x 1.2 + 5 per cent wastage	kg	293.000			

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Add 2.5 per cent of cost of material for drilling holes in angles, flats, splitting angle at bottom, nuts and bolts and welded consumables					
			c) Machinery					
			Tractor-trolley	hour	0.100	476.11	47.61	P&M-053
			d) Painting					
			Painting two coats including priming	sqm	8.000	95.00	760.00	Item 8.9
			e) GST @ 12 % on (a+b+c)				2122.23	
			f) Overhead charges @ 10 % on (a+b+c+e)				1980.75	
			g) Contractor's profit @ 10 % on (a+b+c+e+f)				2178.83	
			h) Cess @ 1% on (a+b+c+e+f+g)				239.25	
			Cost for 30 metre = a+b+c+d+e+f+g+h				24966.33	
			Rate per metre = (a+b+c+d+e+f+h)/30				832.21	
						say	***832.00***	
		Note	i) Adopt any one type of welded steel wire fabric 75 x 50 mm or 75 x 25 mm as per approved design.					
			ii) The item of excavation and cement concrete in foundation shall be measured and paid separately					
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	1.300	355.00	461.50	Item No. 3.13
			ii) Foundation concrete M-15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.650	7876.00	5119.40	Item 12.8 (A)
			iii) Painting of pipe	sqm	4.710	95.00	447.45	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	95.00	205.20	Item 8.9
			(Including GST,OH,CP &Cess of i,ii,iii & iv)					
			a) Labour (For fixing at site)					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor	day	0.250	310.00	77.50	L-13
			Plumber	day	0.010	442.00	4.42	L-02
			b) Material					
			Steel pipe 50 mm external dia as per IS:1239	metre	30.000	429.20	12876.00	M-175
			Medium weight steel channel (ISMC series) 100 mm x 50 mm,10.8 metres length @ 9.2 kg per metre	kg	99.360	48.31	4800.08	M-179 /1000
			Add for drilling holes @ 2 per cent of cost of channels				96.00	
			c) Machinery					
			Tractor-trolley	hour	0.040	476.11	19.04	P&M-053
			d) GST @ 12 % on (a+b)				2145.19	
			e) Overhead charges @ 10 % on (a+b+d)				2002.18	
			f) Contractor's profit @ 10 % on (a+b+d+e)				2202.40	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			g) Cess @ 1% on (a+b+d+e+f)				242.26	
			Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e+f+g				30702.16	
			Rate per metre = (i+ii+iii+iv+a+b+c+d+e+f+g)/10				3070.22	
						say	***3070.00***	
8.21	808		**Tubular Steel Railing on Precast RCC Posts, 1.2 m High Above Ground Level**					
			Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts1.8 metres high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing					
			Unit = Running metre					
			Taking output = 10metres					
			i) Excavation for foundation (6 Nos)6 x 0.6 x 0.6 x 0.6	cum	1.300	355.00	461.50	Item No. 3.13
			ii) Foundation concrete M - 15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.650	7876.00	5119.40	Item 12.8 (A)
			iii) RCC M - 20 for pre cast posts 6 nos of 1.8 metres each	cum	0.320	10045.00	3214.40	Item 14.1(A)
			iv) Painting of pipe	sqm	4.710	95.00	447.45	Item 8.9
			(Including GST,OH,CP &Cess of i,ii,iii & iv)					
			a) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor	day	0.350	310.00	108.50	L-13
			Plumber	day	0.010	442.00	4.42	L-02
			b) Material					
			Steel pipe 50 mm dia as per IS:1239	metre	30.000	429.20	12876.00	M-175
			c) Machinery					
			Tractor-trolley	hour	0.250	476.11	119.03	P&M-053
			d) GST @ 12 % on (a+b+c)				1573.38	
			e) Overhead charges @ 10 % on (a+b+c+d)				1468.49	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1615.34	
			g) Cess @ 1% on (a+b+c+d+e+f)				177.69	
			Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e+f+g				27189.14	
			Rate per metre = (i+ii+iii+iv+a+b+c+d+e+f+g)/10				2718.91	
						say	***2719.00***	
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 (Including GST,OH,CP &Cess)	cum	3.000	10045.00	30135.00	Item 14.1(A)
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			c) Material					
			HYSD steel reinforcement including dowel bars	tonne	0.280	59823.01	16750.44	M-082
			Pre-moulded asphalt filler board	sqm	0.320	67.26	21.52	M-144
			d) GST @ 12 % on (b+c)				2051.53	
			e) Overhead charges @ 10 % on (b+c+d)				1914.77	
			f) Contractor's profit @ 10 % on (b+c+d+e)				2106.24	
			g) Cess @ 1% on (b+c+d+e+f)				231.69	
			Cost for 10 metre = a+b+c+d+e+f+g				53535.35	
			Rate per metre = (a+b+c+d+e+f+g)/10				5353.54	
						say	***5354.00***	
		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.					
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	354.00	21.24	L-12
			Blacksmith	day	0.500	442.00	221.00	L-02
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	476.11	47.61	P&M-053
			c) Material					
			Corrugated sheet,3 mm thick, "W" beam section railing,4.5 m in length	kg	41.210	48.31	1990.86	M-179 /1000
			Channel post 150 x 75 x 5 mm,1.8 m long,3 Nos @ 16.4 kg per metre	kg	88.560	48.31	4278.33	M-179 /1000
			Spacer 150 x 75 x 5 mm channel 0.33 m long,3 Nos @ 16.4 kg per metre	kg	16.240	48.31	784.55	M-179 /1000
			Nuts and bolts	kg	20.000	111.50	2230.00	M-130
			Add 25 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				2320.94	
			d) GST @ 12 % on (a+b+c)				1464.54	
			e) Overhead charges @ 10 % on (a+b+c+d)				1366.91	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1503.60	
			g) Cess @ 1% on (a+b+c+d+e+f)				165.40	
			Cost for 4.5 metre = a+b+c+d+e+f+g				16704.98	
			Rate per metre = (a+b+c+d+e+f+g)/4.5				3712.22	
						say	***3712.00***	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in 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	354.00	21.24	L-12
			Blacksmith	day	0.500	442.00	221.00	L-02
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	476.11	47.61	P&M-053
			c) Material					
			Corrugated sheet,3 mm thick, "Thrie" beam section railing,4.5 m in length	kg	72.940	67.26	4905.94	M-088
			Channel post 150 x 75 x 5 mm, 2 m long,3 Nos @ 16.4 kg per metre	kg	98.400	48.31	4753.70	M-179 /1000
			Spacer 150 x 75 x 5 mm channel 0.546 m long,3 Nos	kg	26.860	48.31	1297.61	M-179 /1000
			Nuts and bolts	kg	30.000	111.50	3345.00	M-130
			Add 15 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				2145.34	
			d) GST @ 12 % on (a+b+c)				2045.69	
			e) Overhead charges @ 10 % on (a+b+c+d)				1909.31	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2100.24	
			g) Cess @ 1% on (a+b+c+d+e+f)				231.03	
			Cost for 4.5 metre = a+b+c+d+e+f+g				23333.71	
			Rate per metre= (a+b+c+d+e+f+g)/4.5				5185.27	
						say	***5185.00***	
		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.					
8.24	**811**		**Road Traffic Signals electrically operated** **Note** Since it is a ready made item commercially produced and erected by specialised firm in the electrical and electronic field, rate may be taken based on market enquiry from firms specialised in this field and ISI certified for the approved design and drawing.					
8.25	**Suggestive**		**Flexible Crash Barrier, Wire Rope Safety Barrier** **Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (ISMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M 15 grade cement concrete 450 x 450 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M 15 grade cement concrete foundation 2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 450 inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement concrete.**					

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Unit = Running metre					
			Taking output = 15 metre					
			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			Blacksmith	day	1.000	442.00	442.00	L-02
			b) Material					
			i) RS Joist 100 x 75 mm - 16.5 m @ 11.5 kg per metre	kg	190.000	48.31	9178.90	M-179 /1000
			ii) Struts - 2 Nos. for terminal posts,2 m long each 2 x 2 x 11.50	kg	46.000	48.31	2222.26	M-179 /1000
			iii) Tie 2 Nos. of 8 mm steel plate,1.5 sqm each for terminal posts @ 62.80 kg/sqm (2 x 1.5)	kg	188.400	48.31	9101.60	M-179 /1000
			iv) Steel wire rope 40 mm, including 7.50 per cent extra for fixing at ends 15 x 4 x 1.075 @ 1 kg per m	kg	65.000	246.02	15991.30	M-177
			Add 5 per cent of cost of material for drilling, gripping, fixing, fabrication and welding consumables				1824.70	
			c) Painting					
			Applying 2 coats of painting on exposed surface	sqm	16.500	95.00	1567.50	Item 8.9
			d) Machinery					
			Tractor-trolley	hour	0.250	476.11	119.03	P&M-053
			e) GST @ 12 % on (a+b+d)				4745.07	
			f) Overhead charges @ 10 % on (a+b+d+e)				4428.73	
			g) Contractor's profit @ 10 % on (a+b+d+e+f)				4871.61	
			h) Cess @ 1% on (a+b+d+e+f+g)				535.88	
			Cost for 15 m = a+b+c+d+e+f+g+h				55691.06	
			Rate per m = (a+b+c+d+e+f+g+h)/15				3712.74	
						say	***3713.00***	

Note The items of excavations and cement concrete works will be measured and included separately as per the approved designs and drawings.

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	354.00	10.62	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			Electrician	day	0.250	442.00	110.50	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	10119.47	10119.47	M-171
			ii) Sodium vapour lamp	each	1.000	2023.89	2023.89	M-168

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Add 5 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				607.17	
			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	95.00	546.25	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	95.00	439.85	Item 8.9
			(Including GST,OH,CP &Cess of C)					
		(i)	**For Fixing in Median**					
			d) GST @ 12 % on (a+b)				1563.20	
			e) Overhead charges @ 10 % on (a+b+d)				1458.99	
			f) Contractor's profit @ 10 % on (a+b+d+e)				1604.88	
			g) Cess @ 1% on (a+b+d+e+f)				176.54	
			Rate per light for fixing in Median= a+b+c+d+e+f+g				18816.36	
						say	***18816.00***	
		(ii)	**For fixing in Footpath**					
			Rate per light for Fixing in Footpath = a+b+c+d+e				18270.11	
						say	***18270.00***	
		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.					
8.28	Suggestive		**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.					
			Unit = Each					
			Taking output = one light					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor	day	0.400	310.00	124.00	L-13
			Electrician	day	0.200	442.00	88.40	L-02
			b) Material					
			i) Steel circular hollow pole of standard specification for street lighting to mount light at 5 m above deck level	each	1.000	6132.74	6132.74	M-170
			ii) Sodium vapour lamp 70 watt	each	1.000	2023.89	2023.89	M-168
			Add 1 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				81.57	
			c) Painting					
			Providing two coats of alluminium paint over steel circular hollow pipe	sqm	2.760	95.00	262.20	Item 8.9
			d) GST @ 12 % on (a+b)				1014.92	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			e) Overhead charges @ 10 % on (a+b+d)				947.26	
			f) Contractor's profit @ 10 % on (a+b+d+e)				1041.99	
			g) Cess @ 1% on (a+b+d+e+f)				114.62	
			Rate per light = a+b+c+d+e+f+g				11838.67	
						say	***11839.00***	

Note The items of cement concrete to be measured and paid separately as per approved design. The rate for painting has already been analysed in this chapter.

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.

(i)	**Single row for one utility service**						
	Unit = Running metre						
	Taking output = 20metres						
	a) Random Rubble masonry/Brick masonry in cement mortar 1:6 for head wall both side (Including GST,OH,CP &Cess of a)	cum	2.360	4470.00	10549.20	Item 12.7 (Addl) B)
	b) Labour					
	Mate	day	0.050	354.00	17.70	L-12
	Mazdoor	day	1.000	310.00	310.00	L-13
	Mazdoor skilled	day	0.250	442.00	110.50	L-15
	c) Material					
	Reinforced Cement Concrete pipe 300 mm dia	metre	20.000	471.68	9433.60	M-151
	Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 20 m)	cum	7.200	434.51	3128.47	M-009
	Collar for joints 300 mm dia	each	9.000	140.71	1266.39	M-083
	Cement mortar 1:2 for joints (Excluding GST,OH,CP &Cess)	cum	0.020	6919.00	138.38	Item 12.6 (B)
	d) Machinery					
	Tractor-trolley	hour	0.500	476.11	238.06	P&M-053
	e) GST @ 12 % on (b+c+d)				1757.17	
	f) Overhead charges @ 10 % on (b+c+d+e)				1640.03	
	g) Contractor's profit @ 10 % on (b+c+d+e+f)				1804.03	
	h) Cess @ 1% on (b+c+d+e+f+g)				198.44	
	Cost for 20 metre = a+b+c+d+e+f+g+h				30591.97	
	Rate per metre = (a+b+c+d+e+f+h)/20				1529.60	
				say	***1530.00***	
8.29 (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. (Including GST,OH,CP &Cess)	cum	3.370	4470.00	15063.90	Item 12.7 (Addl) B)

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			b) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			Mazdoor skilled	day	0.250	442.00	110.50	L-15
			c) Material					
			Reinforced Cement Concrete pipe 300 mm dia	metre	40.000	471.68	18867.20	M-151
			Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 40 m)	cum	14.400	434.51	6256.94	M-009
			Collar for joints 300 mm dia	each	18.000	140.71	2532.78	M-083
			Cement mortar 1:2 for joints (Excluding GST,OH,CP &Cess)	cum	0.040	6919.00	276.76	Item 12.6 (B)
			d) Machinery					
			Tractor-trolley	hour	1.000	476.11	476.11	P&M-053
			e) GST @ 12 % on (b+c+d)				3498.96	
			f) Overhead charges @ 10 % on (b+c+d+e)				3265.70	
			f) Overhead charges @ 10 % on (b+c+d+e)				3592.27	
			h) Cess @ 1% on (b+c+d+e+f+g)				395.15	
			Cost for 20 metre = a+b+c+d+e+f+g+h				54973.97	
			Rate per metre = (a+b+c+d+e+f+g+h)/20				2748.70	
						say	***2749.00***	
8.29		**(iii)**	**Triple rRow for three utility services**					
			Unit = Running metre					
			Taking output = 20metres					
			a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides. (Including GST,OH,CP &Cess)	cum	4.380	4470.00	19578.60	Item 12.7 (Addl) B)
			b) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			Mazdoor skilled	day	1.000	442.00	442.00	L-15
			c) Material					
			Reinforced Cement Concrete pipe 300 mm dia	metre	60.000	471.68	28300.80	M-151
			Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 60 m)	cum	21.600	434.51	9385.42	M-009
			Collar for joints 300 mm dia	each	27.000	140.71	3799.17	M-083
			Cement mortar 1:2 for joints (Excluding GST,OH,CP &Cess)	cum	0.060	6919.00	415.14	Item 12.6 (B)
			d) Machinery					
			Tractor-trolley	hour	1.500	476.11	714.17	P&M-053
			e) GST @ 12 % on (b+c+d)				5285.20	
			f) Overhead charges @ 10 % on (b+c+d+e)				4932.85	
			g) Contractor's profit @ 10 % on (b+c+d+e+f)				5426.14	
			h) Cess @ 1% on (b+c+d+e+f+g)				596.88	
			Cost for 20 metre = a+b+c+d+e+f+g+h				79863.01	
			Rate per metre = (a+b+c+d+e+f+g+h)/20				3993.15	
						say	***3993.00***	

Note 1.Inspection chamber at both ends is the responsibility of the agency who is laying the duct. Hence not included.

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			2.The rates for stone masonry / brick masonry and cement mortar to be adopted from respective clauses.					
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	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Material					
			Aluminium studs 100 x 100 mm fitted with lense reflectors	each	50.000	539.82	26991.00	M-062
			Add 10 per cent of cost of material for fixing and installation				2699.10	
			c) GST @ 12 % on (a+b)				3601.71	
			d) Overhead charges @ 10 % on (a+b+c)				3361.60	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3697.76	
			f) Cess @ 1% on (a+b+c+d+e)				406.75	
			Cost for 50 studs = a+b+c+d+e+f				41082.08	
			Rate per studs = (a+b+c+d+e+f)/50				821.64	
						say	***822.00***	
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	354.00	7.08	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			b) Material					
			Traffic cones with 150 mm reflective sleeve	each	68.000	1471.68	100074.24	M-186
			c) Machinery					
			Tractor-trolley	hour	0.100	476.11	47.61	P&M-053
			c) GST @ 12 % on (a+b)				12034.07	
			d) Overhead charges @ 10 % on (a+b+c)				11231.80	
			e) Contractor's profit @ 10 % on (a+b+c+d)				12354.98	
			f) Cess @ 1% on (a+b+c+d+e)				1359.05	
			Cost for 68 Nos. = a+b+c+d+e+f				137263.83	
			Rate per metre = (a+b+c+d+e+f)/68				2018.59	
						say	***2019.00***	
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 450, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001					

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Unit = each					
			Taking output = one steel portable barricade					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor	day	0.250	310.00	77.50	L-13
			Painter	day	0.500	442.00	221.00	L-18
			Welder	day	0.250	442.00	110.50	L-02
			b) Material					
			Angle iron 45 x 45 x 5 mm	kg	25.000	48.31	1207.75	M-179 /1000
			MS sheet 300 mm wide,2.5 m long and 2.6 mm thick	kg	15.000	48.31	724.65	M-179 /1000
			Paint	litre	0.500	323.01	161.51	M-131
			Add 2 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				38.65	
			c) GST @ 12 % on (a+b)				305.84	
			d) Overhead charges @ 10 % on (a+b+c)				285.45	
			e) Contractor's profit @ 10 % on (a+b+c+d)				313.99	
			f) Cess @ 1% on (a+b+c+d+e)				34.54	
			Rate per barricade = a+b+c+d+e+f				3488.46	
						say	***3488.00***	
8.44	**suggest ive**		**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					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor	day	0.300	310.00	93.00	L-13
			Painter	day	0.600	442.00	265.20	L-18
			Welder	day	0.300	442.00	132.60	L-02
			b) Material					
			Angle iron 50 x 50 x 5 mm,2 m long,2 Nos.	kg	15.000	48.31	724.65	M-179 /1000
			MS sheet of 12 SWG,3 Nos of 200 mm width and 4 m length	kg	50.000	48.31	2415.50	M-179 /1000
			Paint	litre	1.000	323.01	323.01	M-131
			Add 1 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				62.80	
			c) GST @ 12 % on (a+b)				484.14	
			d) Overhead charges @ 10 % on (a+b+c)				451.86	
			e) Contractor's profit @ 10 % on (a+b+c+d)				497.05	
			f) Cess @ 1% on (a+b+c+d+e)				54.68	
			Rate per barricade = a+b+c+d+e+f				5522.19	
						say	***5522.00***	
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 of450, complete as per IRC:SP:55-2001					

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor	day	0.300	310.00	93.00	L-13
			Painter	day	0.600	442.00	265.20	L-18
			Carpenter	day	0.600	442.00	265.20	L-04
			b) Material					
			Timber	cum	0.180	27318.58	4917.34	M-185
			Add 1 per cent of cost of timber for nuts & bolts, nails, etc.				49.17	
			c) GST @ 12 % on (a+b)				672.91	
			d) Overhead charges @ 10 % on (a+b+c)				628.05	
			e) Contractor's profit @ 10 % on (a+b+c+d)				690.86	
			f) Cess @ 1% on (a+b+c+d+e)				75.99	
			Rate per barricade = a+b+c+d+e+f				7675.42	
						say	***7675.00***	
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	354.00	84.96	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			Painter	day	1.000	442.00	442.00	L-18
			Mason	day	2.000	442.00	884.00	L-11
			b) Material					
			Brick	each	1800.000	9.73	17514.00	M-079
			Cement	kg	22.000	9.05	199.10	M-081 /1000
			Sand	cum	0.090	601.77	54.16	M-005
			Paint	litre	1.250	323.01	403.76	M-131
			c) GST @ 12 % on (a+b)				2461.44	
			d) Overhead charges @ 10 % on (a+b+c)				2297.34	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2527.08	
			f) Cess @ 1% on (a+b+c+d+e)				277.98	
			Rate per barricade = a+b+c+d+e+f				28075.82	
						say	***28076.00***	
8.45	**suggest ive**		**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					
			Unit = each					
			Taking output = one drum delineator					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor	day	0.250	310.00	77.50	L-13
			Painter	day	0.250	442.00	110.50	L-18

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			b) Material					
			Steel drum 300 mm dia 1.2 m high/empty bitumen drum	each	1.000	67.26	67.26	M-172
			Paint	litre	0.500	323.01	161.51	M-131
			c) GST @ 12 % on (a+b)				50.86	
			d) Overhead charges @ 10 % on (a+b+c)				47.47	
			e) Contractor's profit @ 10 % on (a+b+c+d)				52.22	
			f) Cess @ 1% on (a+b+c+d+e)				5.74	
			Rate per drum delineator = a+b+c+d+e+f				580.14	
						say	***580.00***	
8.46	suggestive		**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.					
			Unit = each					
			Taking output = one flagman					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Material					
			Flag of red color cloth 600 x 600 mm	each	1.000	67.26	67.26	M-099
			Wooden staff for fastening of flag 25 mm dia, one m long	each	1.000	67.26	67.26	M-196
			c) GST @ 12 % on (a+b)				55.04	
			d) Overhead charges @ 10 % on (a+b+c)				51.37	
			e) Contractor's profit @ 10 % on (a+b+c+d)				56.51	
			f) Cess @ 1% on (a+b+c+d+e)				6.22	
			Rate per flagman = a+b+c+d				627.82	
						say	***628.00***	
8.47	3.9		**Cement mortar 1 : 4 (1 cement : 4 fine sand)**					
			Details of cost for 1 Cu.m.					
			a) Labour					
			Belder	Each	0.600	310.00	186.00	L-20
			Bhisti	Each	0.300	310.00	93.00	L-21
			b) Material					
			Cement	Tonne	0.380	9053.98	3440.51	M-081
			Fine Sand	Cu.m.	1.070	601.77	643.89	M-006
			c) Transport					
			Carriage of Cement	Tonne	0.380	0.00	0.00	
			Carriage of Fine Sand	Cu.m.	1.070	0.00	0.00	
			d) Other Costs					
			Sundries			LS	9.53	M-209
			Hire and running charges of mech mixer			LS	19.05	
						Cost of 1 Cu.m.	4391.98	
						Cost per Cu.m.	4391.98	
						Say	**4392.00**	
8.48	16.68		**Providing and laying 60mm thick faciory made cement concrete interlocking paver block of M - 30 grade made by block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.**					
			Details of cost for 10.00 sqm					
			a) Material					
			Interlocking C.C. paver block (60 mm thick, M-30)	sqm	10.000	400.00	4000.00	M-203

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			Bedding layer - 50mm thick Coarse sand =10x0.050=0.50 cum	cum	0.500	601.77	300.89	M-005
			Fine sand	cum	0.150	601.77	90.27	M-006
			b) Transport					
			Carriage of Coarse sand	cum	0.500	0.00	0.00	
			Carriage of Fine sand	cum	0.150	0.00	0.00	
			Laying charges (Bassed on actual observation)					
			c) Labour					
			Mason (1st Class)	day	0.500	442.00	221.00	L-11
			Mason (2nd Class)	day	0.500	354.00	177.00	L-10
			Beldar	day	1.000	310.00	310.00	L-20
			Coolie	day	0.500	310.00	155.00	L-21
			d) GST @ 12 % on (a+b+c)				630.50	
			e) Overhead charges @ 10 % on (a+b+c+d)				588.47	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				647.31	
			g) Cess @ 1% on (a+b+c+d+e+f)				71.20	
			Rate per 10 Sqm = (a+b+c+d+e+f+g)		Cost for 10.00 sqm		7191.64	
						Cost per Sqm.	719.16	
						Say	**719.20**	
8.49	16.86.1		**Providing and laying gang saw cut 18 mm thick, mirror polished pre moulded and pre polished machine cut granite stone of required size and shape of approved shade, colour and texture in footpath, flooring cut granite stone of required size and shape of approved shade, colour and texture in footpath, flooring in road side plazas and similar locations, laid over 20mm thick base of cement mortar 1:4 (1cement : 4 coarse sand) including grouting the joints with white cement mixed with matching pigment, epoxy touch ups etc. complete as per direction of Engineer-in-Charge.**					
		(i)	**With granite stone of area less than 0.50 sqm.**					
			Detail of cost for 0.50 sqm.					
			a) Material Mirror polished granite 0.5 sqm. Waste @5% = 0.025 +0.5 = 0.525 sqm.					
			Granite of any colour, 18 mm thick	sqm	0.525	1600.00	840.00	M-201
			(slab area upto 0.50 sqm)					
			Mason (1st Class)	day	0.560	442.00	247.52	L-11
			Beldar	day	0.050	310.00	15.50	L-20
			Coolie	day	0.050	310.00	15.50	L-21
			c) Other Costs					
			Base Cement mortar 1 : 4 (1 cement : 4 coarse sand) Rate as per item 8.47. SH: Cement Mortars (Excluding GST,OH,CP &Cess)	cum	0.012	4392.00	52.70	Item 8.47
			Sundries			LS	44.70	M-209
			d) GST @ 12 % on (a+b+c)				145.91	
			e) Overhead charges @ 10 % on (a+b+c+d)				136.18	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				149.80	
			g) Cess @ 1% on (a+b+c+d+e+f)				16.48	
			Rate per 0.50 sqm = (a+b+c+d+e+f+g)		Cost for 0.50 sqm		**1664.29**	
						Cost per sqm.	3328.58	
						Say	**3328.60**	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
8.50	16.87.1		**Providing and laying gang saw cut 30 mm thick, mirror polished pre moulded and pre polished machine cut granite stone of required size and shape of approved shade, colour and texture in footpath, flooring in road side plazas and similar locations, laid over 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) including grouting the joints with white cement mixed with matching pigment, epoxy touch ups etc. complete as per direction of Engineer-in-Charge.**					
		(a)	**With granite stone of area less than 0.50 sqm.**					
			Detail of cost for 0.5 sqm.					
			a) Material					
			Mirror polished granite 0.50 sqm. Waste @5% = 0.025 +0.5 = 0.525 sqm.					
			Granite stone slab 30mm thick	sqm	0.525	1800.00	945.00	M-202
			b) Labour					
			Mason (1st Class)	day	0.560	442.00	247.52	L-11
			Beldar	day	0.050	310.00	15.50	L-20
			Coolie	day	0.050	310.00	15.50	L-21
			c) Other Costs					
			Base Cement mortar 1 : 4 (1 cement : 4 coarse sand) Rate as per item 8.47. SH: Cement Mortars (Excluding GST,OH,CP &Cess)	cum	0.012	4392.00	52.70	Item 8.47
			Sundries			LS	44.70	M-209
			d) GST @ 12 % on (a+b+c)				158.51	
			e) Overhead charges @ 10 % on (a+b+c+d)				147.94	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				162.74	
			g) Cess @ 1% on (a+b+c+d+e+f)				17.90	
			Rate per 0.50 sqm = (a+b+c+d+e+f+g)		Cost for 0.50 sqm		1808.01	
						Cost per Sqm.	3616.02	
						Say	**3616.00**	
8.51	16.88		**Providing and laying matt finished vitrified tile of size 100x100x16mm having water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in out door floors such as footpath, court yard multi models etc., laid on 20mm thick base of cement mortar 1:4 (1cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as direction of Engineer-in-Charge.**					
			Detail of cost for 1 sqm.					
			a) Material					
			Matt finished vitrified tile 100x100 x16mm	sqm	1.000	1000.00	1000.00	M-204
			Cement	tonne	0.0033	9053.98	29.88	M-081
			b) Labour					
			Mason (1st Class)	day	0.200	442.00	88.40	L-11
			Coolie	day	0.200	310.00	62.00	L-21
			c) Other Costs					
			Base Cement mortar 1 : 4 (1 cement : 4 coarse sand) Rate as per item 8.47. SH: Cement Mortars (Excluding GST,OH,CP &Cess)	cum	0.024	4392.00	105.41	Item 8.47
			Sundries			LS	93.45	M-209
			d) GST @ 12 % on (a+b+c)				165.50	
			e) Overhead charges @ 10 % on (a+b+c+d)				154.46	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				169.91	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
			g) Cess @ 1% on (a+b+c+d+e+f)				18.69	
			Rate per sqm = (a+b+c+d+e+f+g)			Cost per sqm	1887.70	
						Say	**1887.70**	
8.52	16.89		**Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineerin-Charge.**					
			Detail of cost for 1 sqm.					
			a) Material					
			Vitrified tile 300x300 x9.8mm	sqm	1.000	500.00	500.00	M-205
			Cement	tonne	0.0033	9053.98	29.88	M-081
			b) Labour					
			Mason (1st Class)	day	0.200	442.00	88.40	L-11
			Coolie	day	0.200	310.00	62.00	L-21
			c) Other Costs					
			Base Cement mortar 1 : 4 (1 cement : 4 coarse sand) Rate as per item 8.47. SH: Cement Mortars (Excluding GST,OH,CP &Cess)	cum	0.024	4392.00	105.41	Item 8.47
			Sundries			LS	84.20	M-209
			d) GST @ 12 % on (a+b+c)				104.39	
			e) Overhead charges @ 10 % on (a+b+c+d)				97.43	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				107.17	
			g) Cess @ 1% on (a+b+c+d+e+f)				11.79	
			Rate per sqm = (a+b+c+d+e+f+g)			Cost per sqm	1190.67	
						Say	**1190.70**	
8.53	16.90		**Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300 x 9.8 mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.**					
			Detail of cost for 1 sqm.					
			a) Material					
			Tactile tile 300x300 x9.8mm	sqm	1.000	1000.00	1000.00	M-206
			Cement	tonne	0.0033	9053.98	29.88	M-081
			b) Labour					
			Mason (1st Class)	day	0.200	442.00	88.40	L-11
			Coolie	day	0.200	310.00	62.00	L-21
			c) Other Costs					
			Base Cement mortar 1 : 4 (1 cement : 4 coarse sand) Rate as per item 8.47. SH: Cement Mortars (Excluding GST,OH,CP &Cess)	cum	0.024	4392.00	105.41	Item 8.47
			Sundries with Carrage			LS	77.60	M-209
			d) GST @ 12 % on (a+b+c)				163.59	
			e) Overhead charges @ 10 % on (a+b+c+d)				152.69	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				167.96	
			g) Cess @ 1% on (a+b+c+d+e+f)				18.48	
						Cost per sqm	1866.01	
						Say	**1866.00**	

Sr No	Ref. to MoRTH / DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
8.54			**Providing and laying factory made chamfered edge Cement Concrete paver blocks in footpath, parks, lawns, drive ways or light traffic parking etc, of required strength, thickness & size/ shape, made by table vibratory method using PU mould, laid in required colour & pattern over 50mm thick compacted bed of sand, compacting and proper embedding/laying of inter locking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand. complete all as per direction of Engineer-in- Charge.**					
		(i)	**60mm thick cement concrete paver block of M-35 grade with approved colour, design & pattern.**					
			Detail of cost for 10 sqm.					
			a) Material					
			Coloured inter locking C.C. paver Block	sqm	10.000	450.00	4500.00	M-207
			Fine sand	cum	0.500	601.77	300.89	M-006
			b) Transport					
			Carriage of Fine Sand	cum	0.500	0.00	0.00	
			c) Labour					
			Mason (1st Class)	day	0.500	442.00	221.00	L-11
			Mason (2nd Class)	day	0.500	354.00	177.00	L-10
			Beldar	day	1.000	310.00	310.00	L-20
			Coolie	day	0.500	310.00	155.00	L-21
			c) Other Costs					
			Sundries			LS	63.50	M-209
			d) GST @ 12 % on (a+b+c)				687.29	
			e) Overhead charges @ 10 % on (a+b+c+d)				641.47	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				705.62	
			g) Cess @ 1% on (a+b+c+d+e+f)				77.62	
			Total		Details of cost for 10 sqm		7839.39	
						Cost per sqm	783.94	
						Say	**783.90**	
		(ii)	**80 mm thick C.C. paver block of M-30 grade with approved color design and pattern.**					
			Detail of cost for 10 sqm.					
			a) Material					
			Interlocking C.C. paver block (80 mm thick, M-30)	sqm	10.000	470.00	4700.00	M-208
			Fine sand	cum	0.150	601.77	90.27	M-006
			Coarse sand	cum	0.500	601.77	300.89	M-005
			b) Transport					
			Carriage of Fine Sand	cum	0.150	0.00	0.00	
			Carriage of Coarse Sand	cum	0.500	0.00	0.00	
			c) Labour					
			Mason (1st Class)	day	0.500	442.00	221.00	L-11
			Mason (2nd Class)	day	0.500	354.00	177.00	L-10
			Beldar	day	1.000	310.00	310.00	L-20
			Coolie	day	0.500	310.00	155.00	L-21
			d) GST @ 12 % on (a+b+c)				714.50	
			e) Overhead charges @ 10 % on (a+b+c+d)				666.87	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				733.55	
			g) Cess @ 1% on (a+b+c+d+e+f)				80.69	
					Details of cost for 10 sqm		8149.77	
						Cost per sqm	814.98	
						Say	**815.00**	

Chapter – 9

PIPE CULVERTS

Preamble:

1 Pipe culverts of sizes 1000 mm and 1200 mm dia in single row and double row which are generally used on roads, have been included. Providing and laying of pipe has been included in the rate analysis. Items of auxiliary works such as excavation, bedding, backfilling, concrete and masonry shall be analysed, as provided under the respective sections and paid for separately.

2 Analysis has been given separately for NP2 pipes for ease of adoption.

3 Cost of any river training and protection work like stone pitching, apron, curtain wall etc. may be analysed under the respective item included in Chapter 16.

4 The joining of pipes is proposed by collar joints.

5 Chain & pulley for lifting the pipes is considered part of overheads.

6 The thickness of first class bedding has been taken as 150 mm. The height of bedding has been taken as 1/10th of overall height of pipe in the analysis. This may be modified as per thickness indicated in the approved drawing.

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	354.00	226.56	L-12
			Mason	day	1.000	442.00	442.00	L-11
			Mazdoor	day	15.000	310.00	4650.00	L-13
			b) Material					
			40mm Aggregate at site	cum	13.800	1393.81	19234.58	M-055
			Sand at site	cum	6.900	601.77	4152.21	M-005
			Cement at site	tonne	3.300	9053.98	29878.13	M-081
			Cost of water	KL	18.000	67.26	1210.68	M-189
			c) Machinery					
			Concrete mixer0.4/ 0.28 cum	hour	6.000	269.91	1619.46	P&M-009
			Generator set 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Water tanker6 KL capacity	hour	3.000	544.25	1632.75	P&M-060
			d) GST @ 12 % on (a+b+c)				7892.43	
			e) Overhead charges @ 10 % on (a+b+c+d)				7366.27	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				8102.90	
			g) Cess @ 1% on (a+b+c+d+e+f)				891.32	
			Cost for 15 cum = a+b+c+d+e+f+g				90023.17	
			Rate per cum = (a+b+c+d+e+f+g)/15				6001.54	
						say	***6002.00***	
		Note	Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.					
9.2	2900		**Laying Reinforced Cement Concrete Pipe NP2 / Prestressed Concrete Pipe on First Class Bedding in Single Row .**					
			Laying Reinforced cement concrete pipe NP2/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	354.00	63.72	L-12
			Mason	day	0.500	442.00	221.00	L-11
			Mazdoor	day	4.000	310.00	1240.00	L-13
			b) Material					
			Sand at site	cum	0.070	601.77	42.12	M-005
			Cement at site	tonne	0.050	9053.98	452.70	M-081
			RCC pipe NP-2/prestressed concrete pipe including collar at site	metre	12.500	1772.57	22157.13	M-149
			Granular material passing 5.6 mm sieve for bedding	cum	4.500	434.51	1955.30	M-009
			c) GST @ 12 % on (a+b)				3135.84	
			d) Overhead charges @ 10 % on (a+b+c)				2926.78	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3219.46	
			f) Cess @ 1% on (a+b+c+d+e)				354.14	
			Cost for 12.5 metres = a+b+c+d+e+f				35768.19	
			Rate per metre = (a+b+c+d+e+f)/12.5				2861.46	
						say	***2861.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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					
9.2		B	**1200 mm dia**					
			a) Labour					
			Mate	day	0.280	354.00	99.12	L-12
			Mason	day	1.000	442.00	442.00	L-11
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Material					
			Sand at site	cum	0.090	601.77	54.16	M-005
			Cement at site	tonne	0.070	9053.98	633.78	M-081
			RCC pipe NP-2/prestressed concrete pipe including collar at site	metre	12.500	2146.90	26836.25	M-150
			Granular material passing 5-6 mm sieve for class bedding	cum	5.000	434.51	2172.55	M-009
			c) GST @ 12 % on (a+b)				3851.74	
			d) Overhead charges @ 10 % on (a+b+c)				3594.96	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3954.46	
			f) Cess @ 1% on (a+b+c+d+e)				434.99	
			Cost for 12.5 metres = a+b+c+d+e+f				43934.01	
			Rate per metre= (a+b+c+d+e+f)/12.5				3514.72	
						say	***3515.00***	
		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 NP2 / Prestressed Concrete Pipe on First Class Bedding in Double Row .** Laying Reinforced cement concrete pipe NP2 / 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	354.00	127.44	L-12
			Mason	day	1.000	442.00	442.00	L-11
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Material					
			Sand at site	cum	0.140	601.77	84.25	M-005
			Cement at site	tonne	0.100	9053.98	905.40	M-081

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			RCC pipe NP-2/prestressed concrete pipe including collar at site	metre	25.000	1772.57	44314.25	M-149
			Granular material passing 5.6 mm sieve for bedding	cum	12.500	434.51	5431.38	M-009
			c) GST @ 12 % on (a+b)				6454.17	
			d) Overhead charges @ 10 % on (a+b+c)				6023.89	
			e) Contractor's profit @ 10 % on (a+b+c+d)				6626.28	
			f) Cess @ 1% on (a+b+c+d+e)				728.89	
			Cost for 12.5 metres = a+b+c+d+e+f				73617.95	
			Rate per metre = (a+b+c+d+e+f)/12.5				5889.44	
		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***	***5889.00***	
			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	354.00	198.24	L-12
			Mason	day	2.000	442.00	884.00	L-11
			Mazdoor	day	12.000	310.00	3720.00	L-13
			b) Material					
			Sand at site	cum	0.180	601.77	108.32	M-005
			Cement at site	tonne	0.140	9053.98	1267.56	M-081
			RCC pipe NP-2 /prestressed concrete pipe including collar at site	metre	25.000	2146.90	53672.50	M-150
			Granular material passing 5-6 mm sieve for class bedding	cum	13.750	434.51	5974.51	M-009
			c) GST @ 12 % on (a+b)				7899.02	
			d) Overhead charges @ 10 % on (a+b+c)				7372.42	
			e) Contractor's profit @ 10 % on (a+b+c+d)				8109.66	
			f) Cess @ 1% on (a+b+c+d+e)				892.06	
			Cost for 12.5 metres = a+b+c+d				90098.29	
			Rate per metre= (a+b+c+d)/12.5				7207.86	
		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***	***7208.00***	
			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					

Chapter – 10

MAINTENANCE OF ROADS

Preamble:

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

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

3 In the case of chocking of drain, it has been assumed that half the depth of drain has been filled with earth/debris, which requires clearance.

4 During the process of landslide clearance on hill roads, it has been assumed that earth will be disposed off by dozer on the valley side. In case there is any objection to this arrangement due to particular site conditions, resources like loader and tipper will have to be provided for disposal of earth/debris for the lead involved.

5 The item like slurry seal, fog spray, crack preventation courses, surface dressing for maintenance works have already been included in chapter 5 and are not being repeated in this chapter.

6 The cost of other items like repair of ruts and undulation maintenance of earthen shoulders, cross drainage works, minor and major bridges and miscelleneous items like turfing and arboriculture, painting and lettering on km stones, repair to signage, repair to footpath, street lighting, railings, dividers, separators and under passes for pedestrains has been given in the "Report of the Committee on Norms for Maintenance of Roads in India" Published by IRC in January 2001 which may be referred for guidance.

7 The repair items related to bridges have been given in chapter 16

Sr No	Ref. to MoRTH/ DSR 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	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Excavator1.0 cum bucket capacity @ 60 cum per hour	hour	0.130	1751.33	227.67	P&M-026
			Tipper (L is average lead in km for borrow earth)	tonne. km	12 x L	7.65	275.40	Lead =3 km & P&M-058
			Add 10 per cent of cost of carriage towards loading and unloading charges.				27.54	
			Plate compactor	hour	0.500	338.05	169.03	P&M-086
			c) GST @ 12 % on (a+b)				161.76	
			d) Overhead charges @ 10 % on (a+b+c)				150.97	
			e) Contractor's profit @ 10 % on (a+b+c+d)				166.07	
			f) Cess @ 1% on (a+b+c+d+e)				18.27	
			Cost for 10 cum = a+b+c+d+e+f				1845.03	
			Rate per cum = (a+b+c+d+e+f)/10				184.50	
						say	***185.00***	
		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 there in cuts					
10.2	**3003**		**Maintenance of Earthen Shoulder (filling with fresh soil)**					
			Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.					
			Unit = sqm					
			Taking output = 100 sqm					
			Assuming average thickness of filling to be 150 mm					
			Quantity of fresh material = 15 cum					
			a) Labour					
			Mate	day	0.180	354.00	63.72	L-12
			Mazdoor	day	4.500	310.00	1395.00	L-13
			b) Machinery					
			Excavator1.0 cum bucket capacity @ 60 cum per hour	hour	0.250	1751.33	437.83	P&M-026
			Tipper (L is average lead in km for borrow earth)	tonne. km	24xL	7.65	550.80	Lead =3 km & P&M-058
			Add 10 per cent of cost of transportation to cover cost of loading and unloading				55.08	
			Plate compactor @ 25 sqm per hour	hour	12.000	338.05	4056.60	P&M-086
			c) GST @ 12 % on (a+b)				787.08	
			d) Overhead charges @ 10 % on (a+b+c)				734.61	
			e) Contractor's profit @ 10 % on (a+b+c+d)				808.07	
			f) Cess @ 1% on (a+b+c+d+e)				88.89	
			Cost for 100 sqm = a+b+c+d+e+f				8977.68	
			Rate per sqm = (a+b+c+d+e+f)100				89.78	
						say	***90.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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	354.00	35.40	L-12
			Mazdoor	day	2.500	310.00	775.00	L-13
			b) Machinery					
			Plate compactor @ 25 sqm per hour	hour	4.000	338.05	1352.20	P&M-086
			c) GST @ 12 % on (a+b)				259.51	
			d) Overhead charges @ 10 % on (a+b+c)				242.21	
			e) Contractor's profit @ 10 % on (a+b+c+d)				266.43	
			f) Cess @ 1% on (a+b+c+d+e)				29.31	
			Cost for 100 sqm = a+b+c+d				2960.06	
			Rate per sqm on = (a+b+c+d)100				29.60	
						say	***30.00***	
		Note	The earth stripped from earthen shoulders to be dumped on the side slopes locally for disposal.					
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	354.00	1331.04	L-12
			Mazdoor	Day	90.000	310.00	27900.00	L-13
			Mazdoor skilled	Day	4.000	442.00	1768.00	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
			HMP 100-110 TPH Capacity	hour	6.000	28522.12	171132.72	P&M-021
			Tipper 10 tonnes capacity	hour	45.000	779.65	35084.25	P&M-048
			Smooth wheeled roller 8-10 tonnes	hour	12.000	561.95	6743.40	P&M-044
			c) Material					
			Crushed stone aggregates nominal size 13.2mm	cum	184.500	1895.58	349734.51	M-052
			Crushed stone aggregates nominal size 11.2mm	cum	92.250	1951.33	180010.19	M-051
			Bitumen 80/100	tonne	14.970	57350.44	858536.09	M-075
			Bitumen emulsion for tack coat including vertical sides of pot hole.	tonne	2.460	47120.35	115916.06	M-077
			d) GST @ 12 % on (a+b+c)				210192.91	
			e) Overhead charges @ 10 % on (a+b+c+d)				196180.05	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				215798.05	
			g) Cess @ 1% on (a+b+c+d+e+f)				23737.79	
			Cost for 10250 sqm = a+b+c+d+e				2397516.38	
			Rate per sqm = (a+b+c+d+e)/10250				233.90	
						say	***234.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
10.5	**3004.2**		**Filling Pot-holes and Patch Repairs with Bituminous concrete, 40mm.**					
			Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2					
			Unit = Sqm					
			Taking out put = 4900 sqm (196 cum)(450 Tonnes)					
			a) Labour					
			Mate	Day	2.920	354.00	1033.68	L-12
			Mazdoor	Day	70.000	310.00	21700.00	L-13
			Mazdoor skilled	Day	3.000	442.00	1326.00	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	6.000	575.22	3451.32	P&M-001
			HMP 100-110 TPH Capacity	hour	6.000	21092.92	126557.52	P&M-022
			Tipper 10 tonnes capacity	hour	45.000	779.65	35084.25	P&M-048
			Smooth wheeled roller 8-10 tonnes	hour	12.000	561.95	6743.40	P&M-044
			c) Material					
			I) Bitumen	tonne	22.500	57350.44	1290384.90	M-075
			ii) Bitumen emulsion for tack coat .	tonne	1.180	47120.35	55602.01	M-077
			iii) Aggregates					
			Grading I - 19mm(Nominal size)					
			20-10mm 35 per cent	cum	99.750	1840.00	183540.00	M-051,M-052,M-053 and M-054
			10-5 mm 23 per cent	cum	65.550	724.78	47509.33	M-025
			5mm and below40 per cent	cum	114.000	863.00	98382.00	M-021,M-022 and M-024
			Add 5 per cent for wastage				16471.57	
			or					
			Grading-II 13mm (Nominal size)					
			13.2-10 mm 30 per cent	cum	85.500	1923.00	164416.50	M-051 and M-052
			10-5 mm 25 per cent	cum	71.250	724.78	51640.58	M-025
			5 mm and Below43 per cent	cum	122.550	863.00	105760.65	M-021,M-022 and M-024
			Filler 2 per cent	tonne	9.000	12878.76	115908.84	M-188
			Add 5 per cent for wastage				21886.33	
			Any one of the above alternatives of aggregate i.e. 19mm or 13mm nominal size may be adopted as per approved design.					
10.5		**(i)**	**for grading I Material**					
			d) GST @ 12 % on (a+b+c)				226534.32	
			e) Overhead charges @ 10 % on (a+b+c+d)				211432.03	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				232575.23	
			g) Cess @ 1% on (a+b+c+d+e+f)				25583.28	
			Cost for 4900 cum = a+b+c+d+e+f+g				2583910.84	
			Rate per cum = (a+b+c+d+e+f+g)/4900				527.33	
						say	***527.00***	
10.5		**(ii)**	**for grading II Material**					
			d) GST @ 12 % on (a+b+c)				240179.52	
			e) Overhead charges @ 10 % on (a+b+c+d)				224167.55	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				246584.31	
			g) Cess @ 1% on (a+b+c+d+e+f)				27124.27	
			Cost for 4900 cum = a+b+c+d+e+f+g				2739551.63	
			Rate per cum = (a+b+c+d+e+f+g)/4900				559.09	
						say	***559.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	For detailed working of quantities of aggregates, refer item 5.8 of chapter 5					
10.6	3004.3.3		**Crack Filling**					
			Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.					
			Unit = Running Meter					
			Taking out put = 500m					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Material					
			Slow-curing bitumen emulsion	Kg	33.000	47.00	1551.00	M-077
			Stone crusher dust	cum	0.020	624.78	12.50	M-021
			c) GST @ 12 % on (a+b)				226.52	
			d) Overhead charges @ 10 % on (a+b+c)				211.42	
			e) Contractor's profit @ 10 % on (a+b+c+d)				232.56	
			f) Cess @ 1% on (a+b+c+d+e)				25.58	
			Cost for 500sqm = a+b+c+d+e+f				2583.74	
			Rate per meter = (a+b+c+d+e+f)/500				5.17	
						say	***5.00***	
10.7	3004.4		**Dusting**					
			Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.					
			Unit = Sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Material					
			Stone crusher dust finer than 3mm with not more than 10 per cent passing 0.075 sieve.	cum	6.250	624.78	3904.88	M-021
			c) GST @ 12 % on (a+b)				546.38	
			d) Overhead charges @ 10 % on (a+b+c)				509.96	
			e) Contractor's profit @ 10 % on (a+b+c+d)				560.95	
			f) Cess @ 1% on (a+b+c+d+e)				61.70	
			Cost for 3500sqm = a+b+c+d+e+f				6232.19	
			Rate per meter = (a+b+c+d+e+f)/3500				1.78	
						say	***1.78***	
10.8	(A) 3004.3.2		**Fog Seal**					
	(B) 3004.3.4		**Crack Prevention courses.**					
	(C) 3004.5		**Slurry Seal**					
	(D) 3004.6		**Surface Dressing for maintenance works.**					
			The above mentioned items have already been included in Chapter 5.					
10.9	3005.1		**Repair of Joint Grooves with Epoxy Mortar**					
			Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete					
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			Chiseller	day	0.500	354.00	177.00	L-05

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Material					
			Epoxy primer	kg	2.500	278.76	696.90	M-097
			Epoxy compound with accessories for preparing epoxy mortar	kg	10.000	245.13	2451.30	M-095
			c) Machinery					
			Air compressor 250 cfm for cleaning	hour	0.050	575.22	28.76	P&M-001
			d) GST @ 12 % on (a+b+c)				422.77	
			e) Overhead charges @ 10 % on (a+b+c+d)				394.59	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				434.05	
			g) Cess @ 1% on (a+b+c+d+e+f)				47.75	
			Cost for 10 metres = a+b+c+d+e+f+g				4822.28	
			Rate per metre = (a+b+c+d+e+f+g)/10				482.23	
						say	***482.00***	
10.10	3005.2		**Repair of old Joints Sealant**					
			Removal of existing sealant and re sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material					
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			b) Material					
			Primer	kg	0.250	189.38	47.35	M-146
			Sealant	kg	1.000	337.17	337.17	M-120
			c) Machinery					
			Air compressor 250 cfm for cleaning	hour	0.050	575.22	28.76	P&M-001
			d) GST @ 12 % on (a+b+c)				69.89	
			e) Overhead charges @ 10 % on (a+b+c+d)				65.23	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				71.76	
			g) Cess @ 1% on (a+b+c+d+e+f)				7.89	
			Cost for 10 metres = a+b+c+d+e+f+g				797.21	
			Rate per metre = (a+b+c+d+e+f+g)/10				79.72	
						say	***80.00***	
10.11	3000		**Hill Side Drain Clearance**					
			Removal of earth from the choked hill side drain and disposing it on the valley side manually					
			Unit = running metre					
			Taking output = 10 metres					
			Assuming muck causing choking of drain to be 0.2 cum per metre, quantity of earth to be removed for 10 metres = 2 cum					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) GST @ 12 % on (a)				40.60	
			c) Overhead charges @ 10 % on				37.89	
			d) Contractor's profit @ 10 % on (a+b+c)				41.68	
			e) Cess @ 1% on (a+b+c+d)				4.58	
			Cost for 10 metres = a+b+c+d+e				463.07	
			Rate per metre = (a+b+c+d+e)/10				46.31	
						say	***46.00***	
10.12	3000		**Land Slide Clearance in soil**					
		(i)	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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Dozer 180 HP @ 60 cum per hour	hour	1.670	4237.17	7076.07	P&M-014
			c) GST @ 12 % on (a+b)				888.03	
			d) Overhead charges @ 10 % on (a+b+c)				828.83	
			e) Contractor's profit @ 10 % on (a+b+c+d)				911.71	
			f) Cess @ 1% on (a+b+c+d+e)				100.29	
			Cost for 100 cum = a+b+c+d+e+f				10129.09	
			Rate per cum = (a+b+c+d+e+f)/100				101.29	
						say	***101.00***	
		Note	Land Slide clearance involves pushing of loose earth slided on the road surface from hill face on the valley side. Since no cutting of original ground is involved, the output of dozer has been taken as 60 cum per hour for soil, ordinary rock and blasted hard rock. However, if there are objection to disposing of earth on valley side, additional resources for its disposal shall be considered as per site conditions.					
		(ii)	Clearance of land slides in soil and ordinary rock by a bull-dozer D 50 A-15 and disposal of the same on the valley side					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Dozer D 50 A-15	hour	1.670	2934.51	4900.63	P&M-014
			c) GST @ 12 % on (a+b)				626.97	
			d) Overhead charges @ 10 % on (a+b+c)				585.18	
			e) Contractor's profit @ 10 % on (a+b+c+d)				643.69	
			f) Cess @ 1% on (a+b+c+d+e)				70.81	
			Cost for 100 cum = a+b+c+d+e+f				7151.44	
			Rate per cum = (a+b+c+d+e+f)/100				71.51	
						say	***72.00***	
10.13	**3000**		**Landslide Clearance in Hard Rock Requiring Blasting**					
			Clearing of land slide in hard rock requiring blasting for 50 per cent of the boulders and disposal of the same on the valley side (Boll Dozer D 50)					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.090	354.00	31.86	L-12
			Mazdoor	day	1.500	310.00	465.00	L-13
			Driller	day	0.750	354.00	265.50	L-06
			Blaster	day	0.070	354.00	24.78	L-03
			b) Machinery					
			Dozer D 50 @ 60 cum per hour	hour	1.670	2934.51	4900.63	P&M-014
			Air compressor 250 cfm with two jack hammer	hour	2.500	575.22	1438.05	P&M-001
			c) Materials					
			Gelatine 80 per cent @ 35 kg per 100 cum	kg	17.500	164.60	2880.50	M-104

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	70.000	11.04	772.80	M-094 /100
			d) GST @ 12 % on (a+b+c)				1293.49	
			e) Overhead charges @ 10 % on (a+b+c+d)				1207.26	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1327.99	
			g) Cess @ 1% on (a+b+c+d+e+f)				146.08	
			Cost for 100 cum = a+b+c+d+e+f+g				14753.94	
			Rate per cum = (a+b+c+d+e+f+g)/100				147.54	
						say	***148.00***	
		Note	Credit for the rock if found acceptable as construction material shall be afforded					
10.14	**3000**		**Snow Clearance on Roads with Dozer**					
			Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side					
			Unit = cum					
			Taking output = 5000 cum					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Dozer D-50 @ 850 cum per hour	hour	5.880	2934.51	17254.92	P&M-014
			c) GST @ 12 % on (a+b)				2148.39	
			d) Overhead charges @ 10 % on (a+b+c)				2005.16	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2205.68	
			f) Cess @ 1% on (a+b+c+d+e)				242.62	
			Cost for 5000 cum = a+b+c+d+e+f				24505.09	
			Rate per cum = (a+b+c+d+e+f)/5000				4.90	
						say	***5.00***	
		Note	i) Labour provided will not be cutting the snow. They will be guiding the dozer operator on the alignment of the road as entire surface gets covered with snow and the edges of the road are not visible and for changing the blade angle. Also they will keep a watch on the hill side for any eventuality of avalanches, slide etc					
10.15	**1900**		**Maintenance of WBM Road**					
			Maintenance of WBM road including filling up of pot holes, ruts and rectifying corrugated surface, damaged edges and ravelling as per technical specification clause 1906.					
			Unit = Sqm.					
			Taking output = affected area @ 5% in 1 km = 1000 x 3.75 x 0.05 = 187.5 Sqm.					
			Quantity = 187.5 x 0.075 = 14.06 cum					
			a) Rate as per item No. 4.9 A (iii) (a)	cum	14.060	2052.00	28851.12	
			b) Add 50% for Extra efforts involved on maintenance to be done in small reaches				14425.56	
			Cost for 187.5 Sqm. = a+b				43276.68	
			Rate per Sqm = (a+b)/187.5				230.81	
						say	***231.00***	
		Note :	***The cost of 25% retrived material may be deducted from rates.***					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
10.16			**Maintenance of Hume Pipe**					
			Maintenance of Hume Pipe Culvert by way of Cleaning, Clearing, Erosion repair, repairs to cracks, parapet wall and protection work as per drawing and technical specification Clasue 1908.					
			Unit = One No. Hume Pipe (1000 mm dia)					
			Taking output = One No. H. P. Culvert					
			a) Labour					
			Mate	day	0.100	354.00	35.40	L-12
			Mazdoor (Unskilled)	day	1.000	310.00	310.00	L-13
			Mason 2nd Class	day	1.400	354.00	495.60	
			b) Material					
			Cement, Sand, Brick, Boulder etc.	L.S.			200.00	P&M-014
			c) GST @ 12 % on (a+b)				124.92	
			d) Overhead charges @ 10 % on (a+b+c)				116.59	
			e) Contractor's profit @ 10 % on (a+b+c+d)				128.25	
			f) Cess @ 1% on (a+b+c+d+e)				14.11	
			Cost for one No., Hume Pipe Culvert = a+b+c+d+e+f				1424.87	
			Rate per Hume Pipe Culvert = (a+b+c+d+e+f)				1424.87	
						say	***1425.00***	
10.17			**Maintenance of Culverts Slab type**					
			Maintenance of Slab type Culvert by way of Cleaning, Clearing, Erosion repair, repairs to cracks, parapet wall and protection work as per drawing and technical specification Clasue 1908.					
			Unit = One No. Culvert (2 m span)					
			Taking output = One No. Slab Culvert					
			a) Labour					
			Mate	day	0.200	354.00	70.80	L-12
			Mazdoor (Unskilled)	day	4.000	310.00	1240.00	L-13
			Mason 2nd Class	day	1.000	354.00	354.00	
			b) Material					
			Cement, Sand, Brick, Boulder etc.	L.S.			500.00	P&M-014
			c) GST @ 12 % on (a+b)				259.78	
			d) Overhead charges @ 10 % on (a+b+c)				242.46	
			e) Contractor's profit @ 10 % on (a+b+c+d)				266.70	
			f) Cess @ 1% on (a+b+c+d+e)				29.34	
			Cost for one No., Slab Culvert = a+b+c+d+e+f				2963.08	
			Rate per Slab Culvert = (a+b+c+d+e+f)				2963.08	
						say	***2963.00***	
10.18			**Maintenance of Causeway**					
			Maintenance of Causeway by way of minor Surface repairs, replacing Guide Posts, repair of flood gauges, removal of debris, providing boulders and protection work and painting as per technical specifications Clause 1909.					
			Unit = One metre					
			Taking output = 50 metre causeway					
			a) Labour					
			Mate	day	0.800	354.00	283.20	L-12
			Mazdoor (Unskilled)	day	1.600	310.00	496.00	L-13
			Mason 1st Class/Painter 1st Class	day	4.000	442.00	1768.00	
			b) Material					
			Cement, Sand, Brick, Boulder etc.	L.S.			350.00	P&M-014
			c) GST @ 12 % on (a+b)				347.66	
			d) Overhead charges @ 10 % on				324.49	
			e) Contractor's profit @ 10 % on (a+b+c+d)				356.94	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Cess @ 1% on (a+b+c+d+e)				39.26	
			Cost for 50 metre = a+b+c+d+e+f				3965.55	
			Rate per metre = (a+b+c+d+e+f)/50				79.31	
						say	***79.00***	
10.19			**Maintenance of Road signs**					
			Maintenance of Road signs by way of cleaning and repainting of mandatory /regulatory/cautionary/informatory and place identifications sign board as per drawings and technical specifications Clause 1910.					
			Unit = 1 km					
			Taking output = one km					
			All types of signs in one km					
			a) Labour					
			Mate	day	0.090	354.00	31.86	L-12
			Mazdoor (Unskilled)	day	2.000	310.00	620.00	L-13
			Painter 1st Class	day	0.125	442.00	55.25	
			b) Material					
			Cement, Sand, Brick, Boulder etc.	L.S.			270.00	
			c) GST @ 12 % on (a+b)				117.25	
			d) Overhead charges @ 10 % on (a+b+c)				109.44	
			e) Contractor's profit @ 10 % on (a+b+c+d)				120.38	
			f) Cess @ 1% on (a+b+c+d+e)				13.24	
			Cost for one km = a+b+c+d+e+f				1337.42	
			Rate per km = (a+b+c+d+e+f)				1337.42	
						say	***1337.00***	
10.20	1900		**Cutting of branches of trees shrubs and trimming of grass and weeds**					
		(i)	Cutting of branches of tress and shrubs from the road way or with in R.O.W. including disposal of wood and leaves to suitable location as per technical specification Clause 1914.					
			Unit = 1 tree					
			Taking output = 10 trees of 900 mm average girth					
			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Mazdoor (Skilled)	day	1.000	442.00	442.00	L-15
			Mazdoor (Unskilled)	day	2.000	310.00	620.00	L-13
			c) GST @ 12 % on (a+b)				132.54	
			d) Overhead charges @ 10 % on (a+b+c)				123.70	
			e) Contractor's profit @ 10 % on (a+b+c+d)				136.07	
			f) Cess @ 1% on (a+b+c+d+e)				14.97	
			Cost for 10 trees = a+b+c+d+e				1511.76	
			Rate per tree= (a+b+c)/10				151.18	
						say	***151.00***	
		(ii)	Cutting of shrubs from the road way or with in R.O.W. and disposal of shrubs to suitable location as per technical specification Clause 1914.					
			Unit = Each					
			Taking output = 100 nos. shrubs					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor (Unskilled)	day	2.000	310.00	620.00	L-13
			b) GST @ 12 % on (a)				77.80	
			c) Overhead charges @ 10 % on				72.61	
			d) Contractor's profit @ 10 % on (a+b+c)				79.87	
			e) Cess @ 1% on (a+b+c+d)				8.79	
			Cost for 100 shrubs = a+b+c+d+e				887.39	
			Rate per shrub= (a+b+c+d+e)/100				8.87	
						say	***9.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(iii)	Triming of grass and weeds from the shoulders/berms and disposing off the same to suitable locations as per technical specifications Clause 1914.					
			Unit = Sqm.					
			Taking output = 1500 Sqm.					
			a) Labour					
			Mate	day	0.400	354.00	141.60	L-12
			Mazdoor (Unskilled)	day	10.000	310.00	3100.00	L-13
			b) GST @ 12 % on (a)				388.99	
			c) Overhead charges @ 10 % on				363.06	
			d) Contractor's profit @ 10 % on (a+b+c)				399.37	
			e) Cess @ 1% on (a+b+c+d)				43.93	
			Cost for 1500 sqm = a+b+c+d+e				4436.95	
			Rate per sqm = (a+b+c+d+e)/1500				2.96	
						say	***3.00***	
10.21			**White washing of parapet walls of CD work and tree trunks**					
			White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning scraping etc. as per technical specifications Clause 1915.					
			Unit = sqm.					
			Taking output = 9 sqm.					
			a) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor (Unskilled)	day	0.143	310.00	44.33	L-13
			Mazdoor (White washer)	day	0.143	310.00	44.33	L-13
			b) Material					
			Lime	quintel	0.045	1287.88	57.95	
			Fevicol adhesive	kg	0.100	135.00	13.50	
			Indigo	kg	0.013	130.00	1.69	
			c) GST @ 12 % on (a+b)				19.84	
			d) Overhead charges @ 10 % on (a+b+c)				18.52	
			e) Contractor's profit @ 10 % on (a+b+c+d)				20.37	
			f) Cess @ 1% on (a+b+c+d+e)				2.24	
			Cost for 9 sqm = a+b+c+d				226.31	
			Rate per sqm = (a+b+c+d)/9				25.15	
						say	***25.00***	
		Note :	For analysis of rates for maintenance works bitumen grade S-90 has been taken. User may modify as per site requirements.					
10.22	**3000**		**Land Slide Clearance in soil**					
		(i)	Clearance of land slides in soil and ordinary rock by a Hydrolic Excavator including loding in a truck and carrying of excavated material to embankment site with a lift upto 1.5 m and lead upto 20 m.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.008	354.00	2.83	L-12
			Mazdoor	day	0.200	310.00	62.00	L-13
			b) Machinery					
			Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	1.670	1751.33	2924.72	P&M-026
			Tipper 5.5 cum capacity,	hour	0.320	779.65	249.49	P&M-048
			c) GST @ 12 % on (a+b)				388.68	
			d) Overhead charges @ 10 % on (a+b+c)				362.77	
			e) Contractor's profit @ 10 % on (a+b+c+d)				399.05	
			f) Cess @ 1% on (a+b+c+d+e)				43.90	
			Cost for 100 cum = a+b+c+d+e+f				4433.44	
			Rate per cum = (a+b+c+d+e+f)/100				44.33	
						say	***44.00***	

Chapter – 11
HORTICULTURE

Preamble:

1. The items of turfing with sods and seeding and mulching have been included in the chapter of earthwork.

2. The rates for grassing of lawns and hedges has been included, as the same may be needed for resting places on highways.

3. Five types of tree guards as under have been provided -

   a) Half brick circular type

   b) Tree guards made from empty bitumen drums 1.30 m high.

   c) Tree guards made from empty bitumen drums 2.00 m high.

   d) Tree guards with MS flat iron.

   e) Tree guards with MS angle and 3 mm steel wire welded on MS flat and bolted to angle iron posts.

4. Selection from above may be made as per actual situation and design.

5. Rates for wrought iron and mild welded work has been included to cater for any miscelleneous work in connection with horticulture, fencing and traffic sign.

6. Though the estimate for compensatory afforestation is made by the forest department, the rate for this item has been analysed and included for the purpose of estimation.

7. As grass and plantation need more care, one mate has been provided for every 10 mazdoors in case of horticulture.

CHAPTER-11
HORTICULTURE

Sr No	Ref. to MoRTH/ DSR 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	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) GST @ 12 % on (a)				38.90	
			c) Overhead charges @ 10 % on (a+b)				36.31	
			d) Contractor's profit @ 10 % on (a+b+c)				39.94	
			e) Cess @ 1% on (a+b+c+d)				4.39	
			Cost for 15 cum= a+b+c+d+e				443.70	
			Rate per cum = (a+b+c+d+e)/15				29.58	
						say	***30.00***	
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	354.00	60.18	L-12
			Mazdoor for grassing	day	0.750	310.00	232.50	L-13
			Mazdoor for maintenance for 30 days	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	544.25	272.13	P&M-060
			c) Material					
			Doob grass	kg	100.000	14.16	1416.00	M-112
			d) GST @ 12 % on (a+b+c)				274.90	
			e) Overhead charges @ 10 % on (a+b+c+d)				256.57	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				282.23	
			g) Cess @ 1% on (a+b+c+d+e+f)				31.05	
			Cost for 100 sqm = a+b+c+d+e+f+g				3135.56	
			Rate per sqm= (a+b+c+d+e+f+g)/100				31.36	
						say	***31.00***	
11.2		(ii)	**In rows 7.5 cm apart in either direction**					
			a) Labour					
			Mate	day	0.220	354.00	77.88	L-12
			Mazdoor for grassing.	day	1.250	310.00	387.50	L-13
			for maintenance for 30 days	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.750	544.25	408.19	P&M-060
			c) Material					
			Doob grass	kg	200.000	14.16	2832.00	M-112
			d) GST @ 12 % on (a+b+c)				481.87	
			e) Overhead charges @ 10 % on (a+b+c+d)				449.74	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				494.72	
			g) Cess @ 1% on (a+b+c+d+e+f)				54.42	
			Cost for 100 sqm = a+b+c+d+e+f+g				5496.32	
			Rate per sqm = (a+b+c+d+e+f+g)/100				54.96	
						say	***55.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note	In the case of horticulture one mate has been provided for every 10 mazdoors as maintenance of grass and plants require more care.					
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	354.00	53.10	L-12
			Mazdoor for preparation of ground	day	0.500	310.00	155.00	L-13
			Mali for fetching doobs grass roots and grassing at 15 cm apart	day	1.000	354.00	354.00	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	544.25	272.13	P&M-060
			Tractor with tiller	hour	0.010	476.11	4.76	P&M-053
			c) Material					
			Supply of farm yard manure at site of work	cum	0.180	134.51	24.21	M-167
			Fine grass	kg	100.000	14.16	1416.00	M-113
			d) GST @ 12 % on (a+b+c)				273.50	
			e) Overhead charges @ 10 % on (a+b+c+d)				255.27	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				280.80	
			g) Cess @ 1% on (a+b+c+d+e+f)				30.89	
			Cost for 100 sqm = a+b+c+d+e+f+g				3119.66	
			Rate per sqm = (a+b+c+d+e+f+g)/100				31.20	
						say	***31.00***	
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	354.00	3540.00	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	15.000	544.25	8163.75	P&M-060
			c) Material					
			Cost of water	KL	90.000	67.26	6053.40	M-189
			d) GST @ 12 % on (a+b+c)				2130.86	
			e) Overhead charges @ 10 % on (a+b+c+d)				1988.80	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2187.68	
			g) Cess @ 1% on (a+b+c+d+e+f)				240.64	
			Cost for 100 sqm = a+b+c+d+e+f+g				24305.13	
			Rate per sqm = (a+b+c+d+e+f+g)/100				243.05	
						say	***243.00***	
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 of0.6 cum per 100 sqm					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.250	354.00	88.50	L-12

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor for preparation of ground	day	1.000	310.00	310.00	L-13
			Mali for fetching doobs grass roots hedges and grassing at 10 cm apart	day	1.500	354.00	531.00	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	544.25	272.13	P&M-060
			Tractor with tiller	hour	0.010	476.11	4.76	P&M-053
			c) Material					
			Supply of farm yard manure at site of work @ 0.6 cum per 100 sqm	cum	0.600	134.51	80.71	M-167
			Fine grass	kg	100.000	14.16	1416.00	M-113
			d) GST @ 12 % on (a+b+c)				324.37	
			e) Overhead charges @ 10 % on (a+b+c+d)				302.75	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				333.02	
			g) Cess @ 1% on (a+b+c+d+e+f)				36.63	
			Cost for 100 sqm = a+b+c+d+e+f+g				3699.87	
			Rate per sqm = (a+b+c+d+e+f+g)/100				37.00	
						say	***37.00***	
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	354.00	3540.00	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	20.000	544.25	10885.00	P&M-060
			c) Material					
			Cost of water	KL	60.000	67.26	4035.60	M-189
			d) GST @ 12 % on (a+b+c)				2215.27	
			e) Overhead charges @ 10 % on (a+b+c+d)				2067.59	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2274.35	
			g) Cess @ 1% on (a+b+c+d+e+f)				250.18	
			Cost for 100 sqm = a+b+c+d+e+f+g				25267.99	
			Rate per sqm = (a+b+c+d+e+f+g)/100				252.68	
						say	***253.00***	
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	354.00	495.60	L-12
			Mazdoor for digging of trench 60 cm wide and 45 cm deep	day	10.000	310.00	3100.00	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	310.00	1240.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	544.25	272.13	P&M-060
			c) Material					
			Cost of hedge plants 2 rows at 30 cm apart	each	2x340	8.58	5834.40	M-116
			Supply of farm yard manure at site of work	cum	4.670	134.51	628.16	M-167

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Pesticide	kg	0.250	343.36	85.84	M-136
			Cost of water	KL	3.000	67.26	201.78	M-189
			d) GST @ 12 % on (a+b+c)				1422.95	
			e) Overhead charges @ 10 % on (a+b+c+d)				1328.09	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1460.90	
			g) Cess @ 1% on (a+b+c+d+e+f)				160.70	
			Cost for 100 metres = a+b+c+d+e+f+g				16230.55	
			Rate per metre = a+b+c+d+e+f+g)/100				162.31	
						say	***162.00***	
		(b)	**Maintenance of hedge for one year**					
			Unit = Running metre					
			Taking output = 100 m					
			a) Labour					
			Mate	day	3.000	354.00	1062.00	L-12
			Mazdoor	day	30.000	310.00	9300.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	5.000	544.25	2721.25	P&M-060
			c) Material					
			Manure sludge/Farm yard manure	cum	2.000	134.51	269.02	M-167
			Pesticide	kg	0.500	343.36	171.68	M-136
			Cost of water	KL	30.000	67.26	2017.80	M-189
			Cost of hedge plants @ 10 per cent casualty	each	68.000	8.58	583.44	M-116
			d) GST @ 12 % on (a+b+c)				1935.02	
			e) Overhead charges @ 10 % on (a+b+c+d)				1806.02	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1986.62	
			g) Cess @ 1% on (a+b+c+d+e+f)				218.53	
			Cost for 100 metres = a+b+c+d+e+f+g				22071.38	
			Rate per metre = a+b+c+d+e+f+g)/100				220.71	
						say	***221.00***	
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	354.00	424.80	L-12
			Mazdoor	day	12.000	310.00	3720.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	6.000	544.25	3265.50	P&M-060
			c) Material					
			Plants	each	200.000	14.16	2832.00	M-100
			Shrubs	each	800.000	12.39	9912.00	M-166
			Manure sludge/Farm yard manure	cum	63.640	134.51	8560.22	M-167
			Pesticide	kg	0.500	343.36	171.68	M-136
			Cost of water	KL	36.000	67.26	2421.36	M-189
			d) GST @ 12 % on (a+b+c)				3756.91	
			e) Overhead charges @ 10 % on (a+b+c+d)				3506.45	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3857.09	
			g) Cess @ 1% on (a+b+c+d+e+f)				424.28	
			Rate per Km = (a+b+c+d+e+f+g)/1000				42852.29	
						say	***42852.00***	
11.8		(b)	**Maintenance of flowering plants and shrubs in central verge for one year**					
			Unit = km					
			Taking output = one km					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Labour					
			Mate	day	36.000	354.00	12744.00	L-12
			Mazdoor	day	365.000	310.00	113150.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	90.000	544.25	48982.50	P&M-060
			c) Material					
			Manure Sludge / farm yard manure at site	cum	10.000	134.51	1345.10	M-167
			Cost of water	KL	180.000	67.26	12106.80	M-189
			Replacement of casualties @ 10 per cent					
			Plants	each	20.000	14.16	283.20	M-100
			Shrubs	each	80.000	12.39	991.20	M-166
			Pesticides	kg	1.500	343.36	515.04	M-136
			d) GST @ 12 % on (a+b+c)				22814.14	
			e) Overhead charges @ 10 % on (a+b+c+d)				21293.20	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				23422.52	
			g) Cess @ 1% on (a+b+c+d+e+f)				2576.48	
			Rate per Km for one year = (a+b+c+d+e+f+g)				260224.18	
						say	***260224.00***	
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	354.00	601.80	L-12
			Mazdoor for planting	day	2.000	310.00	620.00	L-13
			Mazdoor for maintenance for one year	day	15.000	310.00	4650.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	30.000	544.25	16327.50	P&M-060
			c) Material					
			Sapling 2 m high 25 mm dia	each	10.000	98.23	982.30	M-160
			Farm yard manure	cum	0.940	134.51	126.44	M-167
			Pesticide	kg	0.500	343.36	171.68	M-136
			Cost of water	KL	12.000	67.26	807.12	M-189
			d) GST @ 12 % on (a+b+c)				2914.42	
			e) Overhead charges @ 10 % on (a+b+c+d)				2720.13	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2992.14	
			g) Cess @ 1% on (a+b+c+d+e+f)				329.14	
			Cost for 10 trees = a+b+c+d+e+f+g				33242.67	
			Rate per trees = (a+b+c+d+e+f+g)/10				3324.27	
						say	***3324.00***	
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	354.00	42.48	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	544.25	272.13	P&M-060
			c) Material					
			Cost of water	KL	3.000	67.26	201.78	M-189
			d) GST @ 12 % on (a+b+c)				173.57	
			e) Overhead charges @ 10 % on (a+b+c+d)				162.00	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				178.20	
			g) Cess @ 1% on (a+b+c+d+e+f)				19.60	
			Cost for 100 sqm = a+b+c+d+e+f+g				1979.76	
			Rate per sqm = (a+b+c+d+e+f+g)				19.80	
						say	***20.00***	
11.11	**308.2**		**Supply at Site Well Decayed Farm Yard Manure**					
			Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking					
			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	134.51	134.51	M-167
			b) GST @ 12 % on (a)				16.14	
			c) Overhead charges @ 10 % on (a+b)				15.07	
			d) Contractor's profit @ 10 % on (a+b+c)				16.57	
			e) Cess @ 1% on (a+b+c+d)				1.82	
			Rate per cum = (a+b+c)				184.11	
							184.00	
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	354.00	17.70	L-12
			Mason	day	0.250	442.00	110.50	L-11
			Mazdoor	day	0.250	310.00	77.50	L-13
			b) Material					
			Brick 2nd class including carriage	each	230.000	9.73	2237.90	M-079
			Cement mortar 1:6 (Excluding GST.OH.CP &Cess)	cum	0.030	3641.00	109.23	Item 12.6 (D)
			c) GST @ 12 % on (a+b)				306.34	
			d) Overhead charges @ 10 % on (a+b+c)				285.92	
			e) Contractor's profit @ 10 % on (a+b+c+d)				314.51	
			f) Cess @ 1% on (a+b+c+d+e)				34.60	
			Rate per tree guard = a+b+c+d+e+f				3494.20	
						say	***3494.00***	
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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.002	354.00	0.71	L-12
			Mason	day	0.050	442.00	22.10	L-11
			Mazdoor	day	0.050	310.00	15.50	L-13
			b) Material					
			Brick 2nd class including carriage	each	50.000	9.73	486.50	M-079
			c) GST @ 12 % on (a+b)				62.98	
			d) Overhead charges @ 10 % on (a+b+c)				58.78	
			e) Contractor's profit @ 10 % on (a+b+c+d)				64.66	
			f) Cess @ 1% on (a+b+c+d+e)				7.11	
			Cost for 10 metre = a+b+c+d+e+f				718.34	
			Rate per metre = (a+b+c+d+e+f)/10				71.83	
						say	***72.00***	
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	354.00	7.08	L-12
			Blacksmith	day	0.150	442.00	66.30	L-02
			Mazdoor	day	0.070	310.00	21.70	L-13
			b) Material					
			Empty bitumen drum	each	1.000	67.26	67.26	M-172
			MS sheet 50 x 0.5 mm	kg	0.650	48.31	31.40	M-179 /1000
			Rivets 6 mm dia and 10 mm in length	each	22.000	0.97	21.34	M-158
			c) GST @ 12 % on (a+b)				25.81	
			d) Overhead charges @ 10 % on (a+b+c)				24.09	
			e) Contractor's profit @ 10 % on (a+b+c+d)				26.50	
			f) Cess @ 1% on (a+b+c+d+e)				2.91	
			Rate for each tree guard = a+b+c+d+e+f				294.39	
						say	***294.00***	
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	354.00	14.16	L-12
			Blacksmith	day	0.200	442.00	88.40	L-02
			Mazdoor		0.200	310.00	62.00	L-13
			b) Material					
			Empty bitumen drum	each	1.500	67.26	100.89	M-172
			MS sheet50 x 0.5 mm	kg	0.650	48.31	31.40	M-179 /1000
			Rivets 6 mm dia and 10 mm in length	each	50.000	0.97	48.50	M-158
			MSplate30 x 3 mm	kg	1.300	48.31	62.80	M-179 /1000

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) GST @ 12 % on (a+b)				48.98	
			d) Overhead charges @ 10 % on (a+b+c)				45.71	
			e) Contractor's profit @ 10 % on (a+b+c+d)				50.28	
			f) Cess @ 1% on (a+b+c+d+e)				5.53	
			Rate for each tree guard = a+b+c+d+e+f				558.65	
						say	***559.00***	
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	354.00	159.30	L-12
			Blacksmith/ welder for cutting to design and shape and jointing	day	2.000	442.00	884.00	L-02
			Mazdoor for fixing and helper for Blacksmith/welder	day	2.500	310.00	775.00	L-13
			b) Material					
			Angle, tees, channels etc	quintal	1.050	4831.20	5072.76	M-179 /10
			Deduct the cost of scrap	quintal	0.050	(1610.40)	(80.52)	M-179/10/3
			Add 5 per cent of cost of material for welding rods and other welding accessories				249.61	
			c) GST @ 12 % on (a+b)				847.22	
			d) Overhead charges @ 10 % on (a+b+c)				790.74	
			e) Contractor's profit @ 10 % on (a+b+c+d)				869.81	
			f) Cess @ 1% on (a+b+c+d+e)				95.68	
			Rate per quintal = a+b+c+d				9663.60	
						say	***9664.00***	
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.					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Blacksmith	day	0.250	442.00	110.50	L-02
			Mazdoor	day	0.250	310.00	77.50	L-13
			b) Material					
			MS iron 25 x 6 mm	kg	19.200	48.31	927.55	M-179 /1000
			MS iron 25 x 3 mm	kg	9.600	48.31	463.78	M-179 /1000
			Add 5 per cent of cost of material for riveting, bolting and welding accessories					
			c) Machinery					
			Tractor-trolley	hour	0.040	476.11	19.04	P&M-053
			d) Painting					
			Painting two coats including priming	sqm	1.770	95.00	168.15	Item 8.9

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST @ 12 % on (a+b+c)				193.93	
			f) Overhead charges @ 10 % on (a+b+c+e)				181.00	
			g) Contractor's profit @ 10 % on (a+b+c+e+f)				199.10	
			h) Cess @ 1% on (a+b+c+e+f+g)				21.90	
			Rate per tree guard =a+b+c+d+e+f+g+h				2380.15	
						say	***2380.00***	
		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.					
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					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Blacksmith	day	0.250	442.00	110.50	L-02
			Welder	day	0.250	442.00	110.50	L-02
			Mazdoor	day	0.250	310.00	77.50	L-13
			b) Material					
			MS angle 30 x 30 x 3 mm	kg	13.500	48.31	652.19	M-179 /1000
			MS iron 25 x 3 mm	kg	18.000	48.31	869.58	M-179 /1000
			Steel wire 3 mm dia	kg	6.000	161.95	971.70	M-192
			Add 5 per cent of cost of material for riveting, bolting and welding accessories				124.67	
			c) Machinery					
			Tractor-trolley	hour	0.040	476.11	19.04	P&M-053
			d) Painting					
			Painting two coats including priming	sqm	1.500	95.00	142.50	Item 8.9
			e) GST @ 12 % on (a+b+c)				354.41	
			f) Overhead charges @ 10 % on (a+b+c+e)				330.78	
			g) Contractor's profit @ 10 % on (a+b+c+e+f)				363.86	
			h) Cess @ 1% on (a+b+c+e+f+g)				40.02	
			Rate per tree guard = a+b+c+d+e+f+g+h				4184.95	
						say	***4185.00***	
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	354.00	885.00	L-12
			Mazdoor	day	25.000	310.00	7750.00	L-13
			ii) For Maintenance for one year					
			Mate	day	5.000	354.00	1770.00	L-12
			Mazdoor	day	50.000	310.00	15500.00	L-13

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Machinery					
			Dozer D 50 @ 1000 sqm/hour	hour	10.000	2934.51	29345.10	P&M-015
			Water tanker6 KL capacity (for planting)	hour	3.000	544.25	1632.75	P&M-060
			Water tanker6 KL capacity (for maintenance)	hour	25.000	544.25	13606.25	P&M-060
			c) Material					
			Sapling 1 to 1.5 m high 2 cm dia stem	each	290.000	78.58	22788.20	M-160 x 0.8
			Add 10 per cent of sapling	each	29.000	78.58	2278.82	M-160 x 0.8
			Decayed farm yard/sludge manure (planting)	cum	60.900	134.51	8191.66	M-167
			Decayed farm yard/sludge manure (maintenance)	cum	4.000	134.51	538.04	M-167
			Pesticides for planting	kg	0.500	343.36	171.68	M-136
			Pesticides for maintenance	kg	1.500	343.36	515.04	M-136
			Cost of water	KL	18.000	67.26	1210.68	M-189
			d) GST @ 12 % on (a+b+c)				12741.99	
			e) Overhead charges @ 10 % on (a+b+c+d)				11892.52	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13081.77	
			g) Cess @ 1% on (a+b+c+d+e+f)				1439.00	
			Rate per hectare = a+b+c+d+e				145338.50	
						say	***145339.00***	

Note Cost of fencing to be provided as per size of plot and approved design, measured and paid separately

Chapter – 12
FOUNDATION

Preamble:

1 Excavation for structures has been provided both by manual and mechanical means.

2 The earth excavated from foundation has been proposed to be backfilled and balance quantity utilised for road works locally except for marshy soil where disposal has been provided.

3 In case of rocks, excavation has been considered upto a depth of 3 m only.

4 Embedment of foundation in soft and hard rocks has been provided as required by the specifications.

5 Dewatering has been provided in excavation for foundation on percentage basis. In case less dewatering is required or is not required at all for a particular site condition, the same may be reduced/omitted.

6 Mixing of cement concrete has been considered by using concrete mixer and batching plant. The rate can be adopted depending upon availability of equipment and as approved by the Engineer.

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

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

9 Description of items has been given very briefly. Relevant Clause of MoRT&H Specifications have to be referred for detailed specification.

10 The rate for well foundation has been included for diametre varying from 6 m to 12 m. Well for twin D type has also been included.

11 Pneumatic sinking is a specialised job. All safety precautions as per IS:4138 are required to be taken. Medical supervision for such works is considered very essential. Depth of Pneumatic sinking has been restricted to 30 m below normal water level.

12 Rates for various type of piles like bored cast-in-situ, driven precast RCC pile and driven steel piles of H section have been included. If the steel casting in case of driven pile is required to be retained the same is required to be priced separately.

13 Pile driving rigs including vibratory hammers are considered to be self contained with power units and necessary accessories required for driving.

14 The quantity of concrete which is required to be stripped off upto a minimum height of 600 mm above the designed top level of the pile has been taken into account in the rate.

15 The levelling course below the pile cap is proposed with M 15 grade concrete.

16 Rates for Steel reinforcement for cement concrete works are provided separately.

17 Appendix-4 of IRC:78-2000 has to be referred regarding precautions to be taken during sinking of wells.

18 In case of blasting during sinking of wells the inner face of the curb is required to be protected with the steel plates of thickness not less than 10 mm upto top level of well curb. For height above top of curb, the thickness of steel plate may be reduced to 6 mm. This extra height of steel lining should be limited to 3 m.

19 The concrete mix used in bottom plug shall have a minimum cement content of 330 kg/cum and a slump of about 150 mm to permit easy flow of concrete through tremie to fill-up all cavaties.

20 Necessary safety precautions shall be taken for excavation on open foundation for which guidance may be taken from IS:3764.

21 A levelling course of 100 mm thickness in M 10 (1:3:6) shall be provided before laying open foundations.

22 In the case of open foundation, dewatering shall not be permitted from the time of placing of concrete upto 24 hours after placement.

23 In case of open foundation in rock, the trenches around the footing shall be fillied-up with concrete of M 15 grade upto a level of 0.6 m for hard rock and 1.5 m for soft rock above the foundation level. The portion above this shall be filled by boulders grouted with cement.

24 When there are two or more compartments in a well, the lower edge of the cutting edge of the middle stems of such wells shall be kept about 300 mm above that of outer stems to prevent rocking.

25 The well curb shall be in RCC of mix not leaner than M 25 grade with minimum steel reinforcement of 72 kg/cum excluding bond rods.

26 The top of bottom plug shall be atleast 300 mm above top of curb.

27 No dewatering shall be carried out within 7 days of casting of bottom plug.

28 In case of cement concrete piles, the minimum grade of concrete shall be M 35 with minimum cement content of 400 kg/cum.

29 The top of the pile shall project 50 mm into the pile cap and reinforcement of pile shall be fully anchored in pile cap.

30 The minimum thickness of pile cap should be atleast 0.6 m or 1.5 times the diametre of the pile whichever is more.

31 Guidance for piles is to be obtained from IS:2911.

32 Concrete in driven cast-in-situ piles shall be cast upto a minimum height of 600 mm above the designed top level of pile, which shall be stripped off to obtain sound concrete either before final set or after 3 days.

33 In remote areas, for isolated slab culvert/box culvert upto 2 m span, concrete can be hand mixed in accordance with Clause 806 of MORD Specifications. Therefore, in the analysis, for items of concrete, the alternative of hand mixing has also been considered.

Sr No	Ref. to MoRTH/ DSR 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 (without de-watering)					
		I	**Ordinary soil**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Manual Means**					
		(i)	**Depth upto 3 m**					
			a) Labour					
			Mate	day	0.140	354.00	49.56	L-12
			Mazdoor	day	3.500	310.00	1085.00	L-13
			b) GST @ 12 % on (a)				136.15	
			c) Overhead charges @ 20 % on (a+b)				254.14	
			d) Contractor's profit @ 10 % on (a+b)				152.49	
			e) Cess @ 1% on (a+b+c+d)				16.77	
			Cost for 10 cum = a+b+c+d+e				1694.11	
			Rate per cum = (a+b+c+d+e)/10				169.41	
						say	***169.00***	
		(i) b	**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 (with de-watering)**					
		I	**Ordinary soil**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Manual Means**					
		(i)	**Depth upto 3 m**					
			a) Labour					
			Mate	day	0.150	354.00	53.10	L-12
			Mazdoor	day	3.850	310.00	1193.50	L-13
			b) GST @ 12 % on (a)				149.59	
			c) Overhead charges @ 20 % on (a+b)				279.24	
			d) Contractor's profit @ 10 % on (a+b)				167.54	
			e) Cess @ 1% on (a+b+c+d)				18.43	
			Cost for 10 cum = a+b+c+d+e				1861.40	
			Rate per cum = (a+b+c+d+e)/10				186.14	
						say	***186.00***	
12.1 (I) A		(ii)	**Depth 3 m to 6 m (without de-watering)**					
			a) Labour					
			Mate/Supervisor	day	0.180	354.00	63.72	L-12
			Mazdoor	day	4.500	310.00	1395.00	L-13
			b) GST @ 12 % on (a)				175.05	
			c) Overhead charges @ 20 % on (a+b)				326.75	
			d) Contractor's profit @ 10 % on (a+b)				196.05	
			e) Cess @ 1% on (a+b+c+d)				21.57	
			Cost for 10 cum = a+b+c+d+e				2178.14	
			Rate per cum = (a+b+c+d+e)/10				217.81	
						say	***218.00***	
		(ii) b	**Depth 3 m to 6 m (with de-watering)**					
			a) Labour					
			Mate/Supervisor	day	0.210	354.00	74.34	L-12
			Mazdoor	day	5.180	310.00	1605.80	L-13
			b) GST @ 12 % on (a)				201.62	
			c) Overhead charges @ 20 % on (a+b)				376.35	
			d) Contractor's profit @ 10 % on (a+b)				225.81	
			e) Cess @ 1% on (a+b+c+d)				24.84	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cost for 10 cum = a+b+c+d+e				2508.76	
			Rate per cum = (a+b+c+d+e)/10				250.88	
						say	***251.00***	
12.1 (I) A		(iii)	**Depth above 6 m (without de-watering)**					
			a) Labour					
			Mate/Supervisor	day	0.240	354.00	84.96	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) GST @ 12 % on (a)				233.40	
			c) Overhead charges @ 20 % on (a+b)				435.67	
			d) Contractor's profit @ 10 % on (a+b)				261.40	
			e) Cess @ 1% on (a+b+c+d)				28.75	
			Cost for 10 cum = a+b+c+d+e				2904.18	
			Rate per cum = (a+b+c+d+e)/10				290.42	
						say	***290.00***	
		(iii) b	**Depth above 6 m (with de-watering)**					
			a) Labour					
			Mate/Supervisor	day	0.290	354.00	102.66	L-12
			Mazdoor	day	7.200	310.00	2232.00	L-13
			b) GST @ 12 % on (a)				280.16	
			c) Overhead charges @ 20 % on (a+b)				522.96	
			d) Contractor's profit @ 10 % on (a+b)				313.78	
			e) Cess @ 1% on (a+b+c+d)				34.52	
			Cost for 10 cum = a+b+c+d+e				3486.08	
			Rate per cum = (a+b+c+d+e)/10				348.61	
						say	***349.00***	
12.1 (I)		B	**Mechanical Means**					
		(i)	**Depth upto 3 m (without de-watering)**					
			Unit = cum					
			Taking output = 240 cum					
			a) Labour					
			Mate	day	0.320	354.00	113.28	L-12
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1751.33	10507.98	P&M-026
			c) GST @ 12 % on (a+b)				1572.15	
			d) Overhead charges @ 20 % on (a+b+c)				2934.68	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1760.81	
			f) Cess @ 1% on (a+b+c+d+e)				193.69	
			Cost for 240 cum = a+b+c+d+e+f				19562.59	
			Rate per cum = (a+b+c+d+e+f)/240				81.51	
						say	***82.00***	
		(i) c	**Depth upto 3 m (with de-watering)**					
			Unit = cum					
			Taking output = 240 cum					
			a) Labour					
			Mate	day	0.336	354.00	118.94	L-12
			Mazdoor	day	8.400	310.00	2604.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.300	1751.33	11033.38	P&M-026
			c) GST @ 12 % on (a+b)				1650.76	
			d) Overhead charges @ 20 % on (a+b+c)				3081.42	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1848.85	
			f) Cess @ 1% on (a+b+c+d+e)				203.37	
			Cost for 240 cum = a+b+c+d+e+f				20540.72	
			Rate per cum = (a+b+c+d+e+f)/240				85.59	
						say	***86.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.1 (I) B		(ii)	**Depth 3 m to 6 m (without de-watering)**					
			Unit = cum					
			Taking output = 210 cum					
			a) Labour					
			Mate	day	0.320	354.00	113.28	L-12
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1751.33	10507.98	P&M-026
			c) GST @ 12 % on (a+b)				1572.15	
			d) Overhead charges @ 20 % on (a+b+c)				2934.68	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1760.81	
			f) Cess @ 1% on (a+b+c+d+e)				193.69	
			Cost for 210 cum = a+b+c+d+e+f				19562.59	
			Rate per cum = (a+b+c+d+e+f)/210				93.16	
						say	***93.00***	
		(ii) c	**Depth 3 m to 6 m (with de-watering)**					
			Unit = cum					
			Taking output = 210 cum					
			a) Labour					
			Mate	day	0.344	354.00	121.78	L-12
			Mazdoor	day	8.600	310.00	2666.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.450	1751.33	11296.08	P&M-026
			c) GST @ 12 % on (a+b)				1690.06	
			d) Overhead charges @ 20 % on (a+b+c)				3154.78	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1892.87	
			f) Cess @ 1% on (a+b+c+d+e)				208.22	
			Cost for 210 cum = a+b+c+d+e+f				21029.79	
			Rate per cum = (a+b+c+d+e+f)/210				100.14	
						say	***100.00***	
12.1 (I) B		(iii)	**Depth above 6m (without de-watering)**					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.400	354.00	141.60	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1751.33	10507.98	P&M-026
			c) GST @ 12 % on (a+b)				1649.95	
			d) Overhead charges @ 20 % on (a+b+c)				3079.91	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1847.94	
			f) Cess @ 1% on (a+b+c+d+e)				203.27	
			Cost for 180 cum = a+b+c+d+e+f				20530.65	
			Rate per cum = (a+b+c+d+e+f)/180				114.06	
						say	***114.00***	
		(iii) c	**Depth above 6m (with de-watering)**					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.440	354.00	155.76	L-12
			Mazdoor	day	11.000	310.00	3410.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.600	1751.33	11558.78	P&M-026
			c) GST @ 12 % on (a+b)				1814.94	
			d) Overhead charges @ 20 % on (a+b+c)				3387.90	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				2032.74	
			f) Cess @ 1% on (a+b+c+d+e)				223.60	
			Cost for 180 cum = a+b+c+d+e+f				22583.72	
			Rate per cum = (a+b+c+d+e+f)/180				125.47	
						say	***125.00***	
12.1		II	**Ordinary Rock (not requiring blasting)**					
		A	**Manual Means**					
		(i)	**Depth upto 3 m (without de-watering)**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.200	354.00	70.80	L-12
			Mazdoor	day	5.000	310.00	1550.00	L-13
			b) GST @ 12 % on (a)				194.50	
			c) Overhead charges @ 20 % on (a+b)				363.06	
			d) Contractor's profit @ 10 % on (a+b+c)				217.84	
			e) Cess @ 1% on (a+b+c+d)				23.96	
			Cost for 10 cum = a+b+c+d+e				2420.16	
			Rate per cum = (a+b+c+d+e)/10				242.02	
						say	***242.00***	
		(ii)	**Depth upto 3 m (with de-watering)**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.220	354.00	77.88	L-12
			Mazdoor	day	5.500	310.00	1705.00	L-13
			b) GST @ 12 % on (a)				213.95	
			c) Overhead charges @ 20 % on (a+b)				399.37	
			d) Contractor's profit @ 10 % on (a+b+c)				239.62	
			e) Cess @ 1% on (a+b+c+d)				26.36	
			Cost for 10 cum = a+b+c+d+e				2662.18	
			Rate per cum = (a+b+c+d+e)/10				266.22	
						say	***266.00***	
12.1 (II)		B	**Mechanical Means**					
			Depth upto 3 m (without de-watering)					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.240	354.00	84.96	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1751.33	10507.98	P&M-026
			c) GST @ 12 % on (a+b)				1494.35	
			d) Overhead charges @ 20 % on (a+b+c)				2789.46	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1673.68	
			f) Cess @ 1% on (a+b+c+d+e)				184.10	
			Cost for 180 cum = a+b+c+d+e+f				18594.53	
			Rate per cum = (a+b+c+d+e+f)/180				103.30	
						say	***103.00***	
		C	**Depth upto 3 m (with de-watering)**					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.264	354.00	93.46	L-12
			Mazdoor	day	6.600	310.00	2046.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.600	1751.33	11558.78	P&M-026
			c) GST @ 12 % on (a+b)				1643.79	
			d) Overhead charges @ 20 % on (a+b+c)				3068.41	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				1841.04	
			f) Cess @ 1% on (a+b+c+d+e)				202.51	
			Cost for 180 cum = a+b+c+d+e+f				20453.99	
			Rate per cum = (a+b+c+d+e+f)/180				113.63	
						say	***114.00***	
12.1		III	**Hard Rock (requiring blasting)**					
		A	**Manual Means**					
			Without de-watering					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.350	354.00	123.90	L-12
			Driller	day	0.500	354.00	177.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			Mazdoor	day	8.000	310.00	2480.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.000	575.22	575.22	P&M-001
			c) Material					
			Blasting Material	kg	3.500	164.60	576.10	M-104
			Detonator electric	each	14.000	11.04	154.56	M-094/100
			d) GST @ 12 % on (a+b+c)				501.03	
			e) Overhead charges @ 20 % on (a+b+c+d)				935.26	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				561.16	
			g) Cess @ 1% on (a+b+c+d+e+f)				61.73	
			Cost for 10 cum = a+b+c+d+e+f+g				6234.46	
			Rate per cum = (a+b+c+d+e+f+g)/10				623.45	
						say	***623.00***	
		B	**With de-watering**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.385	354.00	136.29	L-12
			Driller	day	0.550	354.00	194.70	L-06
			Blaster	day	0.275	354.00	97.35	L-03
			Mazdoor	day	8.800	310.00	2728.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.100	575.22	632.74	P&M-001
			c) Material					
			Blasting Material	kg	3.500	164.60	576.10	M-104
			Detonator electric	each	14.000	11.04	154.56	M-094/100
			d) GST @ 12 % on (a+b+c)				542.37	
			e) Overhead charges @ 20 % on (a+b+c+d)				1012.42	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				607.45	
			g) Cess @ 1% on (a+b+c+d+e+f)				66.82	
			Cost for 10 cum = a+b+c+d+e+f+g				6748.80	
			Rate per cum = (a+b+c+d+e+f+g)/10				674.88	
						say	***675.00***	
12.1		IV	**Hard Rock (blasting prohibited)**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Mechanical Means (without de-watering)**					
			a) Labour					
			Mate	day	0.200	354.00	70.80	L-12
			Mazdoor	day	5.000	310.00	1550.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.000	575.22	3451.32	P&M-001

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) GST @ 12 % on (a+b)				608.65	
			d) Overhead charges @ 20 % on (a+b+c)				1136.15	
			e) Contractor's profit @ 10 % on (a+b+c+d)				681.69	
			f) Cess @ 1% on (a+b+c+d+e)				74.99	
			Cost for 10 cum = a+b+c+d+e+f				7573.60	
			Rate per cum = (a+b+c+d+e+f)/10				757.36	
						say	***757.00***	
		B	**Mechanical Means (with de-watering)**					
			a) Labour					
			Mate	day	0.220	354.00	77.88	L-12
			Mazdoor	day	5.500	310.00	1705.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.600	575.22	3796.45	P&M-001
			c) GST @ 12 % on (a+b)				669.52	
			d) Overhead charges @ 20 % on (a+b+c)				1249.77	
			e) Contractor's profit @ 10 % on (a+b+c+d)				749.86	
			f) Cess @ 1% on (a+b+c+d+e)				82.48	
			Cost for 10 cum = a+b+c+d+e+f				8330.96	
			Rate per cum = (a+b+c+d+e+f)/10				833.10	
						say	***833.00***	
12.1		V	**Marshy Soil**					
			Unit = cum					
			Taking output = 10 cum					
			Depth upto 3 m					
		A	**Manual means (without de-watering)**					
			a) Labour					
			Mate/Supervisor	day	0.400	354.00	141.60	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Tractor-trolley for removal.	hour	2.670	476.11	1271.21	P&M-053
			c) GST @ 12 % on (a+b)				541.54	
			d) Overhead charges @ 20 % on (a+b+c)				1010.87	
			e) Contractor's profit @ 10 % on (a+b+c+d)				606.52	
			f) Cess @ 1% on (a+b+c+d+e)				66.72	
			Cost for 10 cum = a+b+c+d+e+f				6738.46	
			Rate per cum = (a+b+c+d+e+f)/10				673.85	
						say	***674.00***	
		B	**Manual means (with de-watering)**					
			a) Labour					
			Mate/Supervisor	day	0.520	354.00	184.08	L-12
			Mazdoor	day	13.000	310.00	4030.00	L-13
			b) Machinery					
			Tractor-trolley for removal.	hour	2.670	476.11	1271.21	P&M-053
			c) GST @ 12 % on (a+b)				658.23	
			d) Overhead charges @ 20 % on (a+b+c)				1228.70	
			e) Contractor's profit @ 10 % on (a+b+c+d)				737.22	
			f) Cess @ 1% on (a+b+c+d+e)				81.09	
			Cost for 10 cum = a+b+c+d+e+f				8190.53	
			Rate per cum = (a+b+c+d+e+f)/10				819.05	
						say	***819.00***	
12.1 (V)		A	**Mechanical Means (without de-watering)**					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	2.000	310.00	620.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.170	1751.33	297.73	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.450	779.65	350.84	P&M-048

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) GST @ 12 % on (a+b)				155.63	
			d) Overhead charges @ 20 % on (a+b+c)				290.50	
			e) Contractor's profit @ 10 % on (a+b+c+d)				174.30	
			f) Cess @ 1% on (a+b+c+d+e)				19.17	
			Cost for 10 cum = a+b+c+d+e+f				1936.49	
			Rate per cum = (a+b+c+d+e+f)/10				193.65	
						say	***194.00***	
		B	**Mechanical Means (with de-watering)**					
			a) Labour					
			Mate	day	0.096	354.00	33.98	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	2.400	310.00	744.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.204	1751.33	357.27	P&M-026
			Tipper 5.5 cum capacity, 4 trips per	hour	0.540	779.65	421.01	P&M-048
			c) GST @ 12 % on (a+b)				186.75	
			d) Overhead charges @ 20 % on (a+b+c)				348.60	
			e) Contractor's profit @ 10 % on (a+b+c+d)				209.16	
			f) Cess @ 1% on (a+b+c+d+e)				23.01	
			Cost for 10 cum = a+b+c+d+e+f				2323.78	
			Rate per cum = (a+b+c+d+e+f)/10				232.38	
						say	***232.00***	
		VI	**Back Filling in Marshy Foundation Pits**					
			Unit : Cum					
			Taking Output : 6 cum					
			a) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	3.000	310.00	930.00	L-13
			b) Machinery					
			Tractor-trolley for transportation	hour	2.000	476.11	952.22	P&M-053
			c) GST @ 12 % on (a+b)				230.96	
			d) Overhead charges @ 20 % on (a+b+c)				431.13	
			e) Contractor's profit @ 10 % on (a+b+c+d)				258.68	
			f) Cess @ 1% on (a+b+c+d+e)				28.45	
			Cost for 6 cum = a+b+c+d+e+f				2873.92	
			Rate per cum = (a+b+c+d+e+f)/6				478.99	
						say	***479.00***	
12.2	304		**Filling Annular Space Around Footing in Rock**					
			Unit = cum					
			Taking out put = 1 cum					
			Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per item 12.4.					
12.3	304		**Sand Filling in Foundation Trenches as per Drawing & Technical Specification**					
			Unit = cum					
			Taking output = 1 cum					
			a) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor	day	0.300	310.00	93.00	L-13
			b) Material					
			Sand (assuming 20 per cent voids)	cum	1.200	601.77	722.12	M-006
			c) GST @ 12 % on (a+b)				98.24	
			d) Overhead charges @ 20 % on (a+b+c)				183.38	
			e) Contractor's profit @ 10 % on (a+b+c+d)				110.03	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Cess @ 1% on (a+b+c+d+e)				12.10	
			Rate per cum = a+b+c+d+e+f				1222.41	
						say	***1222.00***	
12.4	2100		**PCC 1:3:6 in Foundation**					
			Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.					
			Unit = cum					
			Taking output = 15 cum					
			a) Labour					
			Mate	day	0.640	354.00	226.56	L-12
			Mason	day	1.000	442.00	442.00	L-11
			Mazdoor	day	15.000	310.00	4650.00	L-13
			b) Material					
			40 mm Aggregate	cum	13.500	1393.81	18816.44	M-055
			coarse Sand	cum	6.750	601.77	4061.95	M-005
			cement	tonne	3.450	9053.98	31236.23	M-081
			Cost of water	KL	18.000	67.26	1210.68	M-189
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Water tanker 6 KL capacity	hour	2.000	544.25	1088.50	P&M-060
			d) GST @ 12 % on (a+b+c)				7929.08	
			e) Overhead charges @ 20 % on (a+b+c+d)				14800.96	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				8880.57	
			g) Cess @ 1% on (a+b+c+d+e+f)				976.86	
			Cost for 15 cum = a+b+c+d+e+f+g				98663.17	
			Rate per cum = (a+b+c+d+e+f+g)/15				6577.54	
						say	***6578.00***	
		Note	Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.					
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	2500.000	9.73	24325.00	M-079
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis) (Excluding GST,OH,CP &Cess)	cum	1.200	5543.00	6651.60	Item 12.6 (A)
			b) Labour					
			Mate	day	0.480	354.00	169.92	L-12
			Mason	day	4.000	442.00	1768.00	L-11
			Mazdoor	day	8.000	310.00	2480.00	L-13
			c) GST @ 12 % on (a+b)				4247.34	
			d) Overhead charges @ 20 % on (a+b+c)				7928.37	
			e) Contractor's profit @ 10 % on (a+b+c+d)				4757.02	
			f) Cess @ 1% on (a+b+c+d+e)				523.27	
			Cost for 5 cum = a+b+c+d+e+f				52850.52	
			Rate per cum (a+b+c+d+e+f)/5				10570.10	
						say	***10570.00***	
12.6	Sub-analysis	**(A)**	**Cement Mortar 1:3 (1 cement : 3 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.510	9053.98	4617.53	M-081
			Sand	cum	1.050	601.77	631.86	M-005
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	0.900	310.00	279.00	L-13
			Total Material and Labour = (a+b)			*say*	**5543.00**	
	Sub-analysis (Addl.)	(B)	**Cement Mortar1:2 (1cement :2 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.672	9053.98	6084.27	M-081
			Sand	cum	0.930	601.77	559.65	M-005
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	0.900	310.00	279.00	L-13
			Total Material and Labour = (a+b)			*say*	**6937.00**	
	Sub-analysis (Addl.)	(C)	**Cement Mortar1:4 (1cement :4 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.403	9053.98	3648.75	M-081
			Sand	cum	1.120	601.77	673.98	M-005
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	0.900	310.00	279.00	L-13
			Total Material and Labour = (a+b)			*say*	**4616.00**	
	Sub-analysis (Addl.)	(D)	**Cement Mortar1:6 (1cement :6 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.288	9053.98	2607.55	M-081
			Sand	cum	1.337	601.77	804.57	M-005
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	0.900	310.00	279.00	L-13
			Total Material and Labour = (a+b)			*say*	**3705.00**	
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	5.500	576.11	3168.61	M-169
			Through and bond stone (35no.x0.24mx0.24mx0.39m = 0.79 cu.m)	each	35.000	14.16	495.60	M-182
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis) (Excluding GST,OH,CP &Cess)	cum	1.500	5543.00	8314.50	Item 12.6 (A)
			b) Labour					
			Mate	day	0.660	354.00	233.64	L-12
			Mason	day	7.500	442.00	3315.00	L-11
			Mazdoor	day	9.000	310.00	2790.00	L-13
			c) GST @ 12 % on (a+b)				2198.08	
			d) Overhead charges @ 20 % on (a+b+c)				4103.09	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2461.85	
			f) Cess @ 1% on (a+b+c+d+e)				270.80	
			Cost for 5 cum = a+b+c+d+e+f				27351.17	
			Rate per cum (a+b+c+d+e+f)/5				5470.23	
						say	***5470.00***	
	1405.3	(B)	**Random Rubble Masonry** (coursed/uncoursed)					
			Unit = cum					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Taking output = 5 cum					
			a) Material					
			Stone	cum	5.500	576.11	3168.61	M-148
			Through and bond stone (35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)	each	35.000	14.16	495.60	M-182
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis) (Excluding GST,OH,CP &Cess)	cum	1.550	5543.00	8591.65	Item 12.6 (A)
			b) Labour					
			Mate	day	0.620	354.00	219.48	L-12
			Mason	day	6.000	442.00	2652.00	L-11
			Mazdoor	day	9.000	310.00	2790.00	L-13
			c) GST @ 12 % on (a+b)				2150.08	
			d) Overhead charges @ 20 % on (a+b+c)				4013.48	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2408.09	
			f) Cess @ 1% on (a+b+c+d+e)				264.89	
			Cost for 5 cum = a+b+c+d+e+f				26753.88	
			Rate per cum (a+b+c+d+e+f)/5				5350.78	
						say	***5351.00***	
		Note	The labour already considered in cement mortar has been taken into account while proposing labour for masonry works.					
12.8	**1500, 1700 & 2100**		**Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.**					
		A (i)	**PCC Grade M15**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	4.130	9053.98	37392.94	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm Aggregate	cum	8.100	1393.81	11289.86	M-055
			20 mm Aggregate	cum	4.050	1784.07	7225.48	M-053
			10 mm Aggregate	cum	1.350	1951.33	2634.30	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 63 KVA	hour	6.000	780.53	4683.18	P&M-019
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***5072.000***			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				3042.98	
			e) GST @ 12 % on (a+b+c+d)				9494.11	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				17722.34	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				10633.40	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1169.67	
			Cost for 15 cum = a+b+c+d+e+f+g+h				118137.11	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				7875.81	
						say	***7876.00***	
		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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Material					
			Cement	tonne	5.160	9053.98	46718.54	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm Aggregate	cum	5.400	1393.81	7526.57	M-055
			20 mm Aggregate	cum	5.400	1784.07	9633.98	M-053
			10 mm Aggregate	cum	2.700	1951.33	5268.59	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***5649.000***			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				3388.82	
			e) GST @ 12 % on (a+b+c+d)				10573.11	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				19736.47	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				11841.88	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1302.61	
			Cost for 15 cum = a+b+c+d+e+f+g+h				131563.30	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				8770.89	
						say	***8771.00***	
12.8		**C**	**RCC Grade M20**					
	Case I		**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.210	9053.98	47171.24	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***5849.000***			
			d) Formwork @ 4 per cent on (a+b+c)				3509.28	
			e) GST @ 12 % on (a+b+c+d)				10948.97	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				20438.07	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				12262.84	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1348.91	
			Cost for 15 cum = a+b+c+d+e+f+g+h				136240.19	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				9082.68	
						say	***9083.00***	
12.8 C	**Case II**		**With Batching Plant, Transit Mixer and Concrete Pump**					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	41.660	9053.98	377188.81	M-081
			Coarse Sand	cum	54.000	601.77	32495.58	M-004

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 km, L-lead in km	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***5663.000***			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				27178.12	
			e) GST @ 12 % on (a+b+c+d)				84795.75	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				158285.40	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				94971.24	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				10446.84	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1055130.46	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				8792.75	
						say	***8793.00***	
12.8		**D**	**PCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.990	9053.98	54233.34	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm Aggregate	cum	5.400	1393.81	7526.57	M-055
			20 mm Aggregate	cum	5.400	1784.07	9633.98	M-053
			10 mm Aggregate	cum	2.700	1951.33	5268.59	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6150.000***			
			d) Formwork @ 3.75 per cent of (a+b+c)				3458.82	
			e) GST @ 12 % on (a+b+c+d)				11483.28	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				21435.46	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				12861.28	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1414.74	
			Cost for 15 cum = a+b+c+d+e+f+g+h				142888.79	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				9525.92	
						say	***9526.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.8 D		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	47.950	9053.98	434138.34	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			40 mm Aggregate	cum	43.200	1393.81	60212.59	M-055
			20 mm Aggregate	cum	43.200	1784.07	77071.82	M-053
			10 mm Aggregate	cum	21.600	1951.33	42148.73	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.000	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.000	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	6.000	1132.74	6796.44	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.000	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***5882.000***			
			d) Formwork @ 3.75 per cent of cost of concrete i.e. cost of material, labour and machinery				26465.10	
			e) GST @ 12 % on (a+b+c+d)				87864.12	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				164013.03	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				98407.82	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				10824.86	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1093310.85	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				9110.92	
						say	***9111.00***	
12.8		E	**RCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.050	9053.98	54776.58	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6356.000***			
			d) Formwork @ 3.75 per cent of a+b+c.				3575.15	
			e) GST @ 12 % on (a+b+c+d)				11869.51	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				22156.42	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				13293.85	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1462.32	
			Cost for 15 cum = a+b+c+d+e+f+g+h				147694.71	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				9846.31	
						say	***9846.00***	
12.8 E		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Unit: cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	48.380	9053.98	438031.55	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader 1 cum capacity 1 cum	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6170.000***			
			d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				27761.09	
			e) GST @ 12 % on (a+b+c+d)				92166.83	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				172044.75	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				103226.85	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				11354.95	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1146850.32	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				9557.09	
						say	***9557.00***	
12.8		**F**	**PCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.080	9053.98	55048.20	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm Aggregate	cum	5.400	1393.81	7526.57	M-055
			20 mm Aggregate	cum	5.400	1784.07	9633.98	M-053
			10 mm Aggregate	cum	2.700	1951.33	5268.59	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6204.000***			
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				3256.75	
			e) GST @ 12 % on (a+b+c+d)				11556.82	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				21572.73	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				12943.64	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1423.80	
			Cost for 15 cum = a+b+c+d+e+f+g+h				143803.81	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				9586.92	
						say	***9587.00***	
12.8 F		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	48.600	9053.98	440023.43	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			40 mm Aggregate	cum	43.200	1393.81	60212.59	M-055
			20 mm Aggregate	cum	43.200	1784.07	77071.82	M-053
			10 mm Aggregate	cum	21.600	1951.33	42148.73	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6016.000***			
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				25263.55	
			e) GST @ 12 % on (a+b+c+d)				89649.51	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				167345.75	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				100407.45	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				11044.82	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1115526.75	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				9296.06	
						say	***9296.00***	
12.8		**G**	**RCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.100	9053.98	55229.28	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6387.000***			
			d) Formwork @ 3.5 per cent on cost of concrete i.e. cost of material, labour and machinery				3352.66	
			e) GST @ 12 % on (a+b+c+d)				11897.14	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				22207.99	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				13324.80	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1465.73	
			Cost for 15 cum = a+b+c+d+e+f+g+h				148038.48	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				9869.23	
						say	***9869.00***	
12.8 G		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.800	9053.98	441834.22	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6201.000***			
			d) Formwork @ 3.5 per cent of cost of concrete i.e. cost of material, labour and machinery				26043.45	
			e) GST @ 12 % on (a+b+c+d)				92417.04	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				172511.80	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				103507.08	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				11385.78	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1149963.67	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				9583.03	
						say	***9583.00***	
12.8		**H**	**RCC Grade M35**					
		Case I	**Using Concrete Mixer**					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.330	9053.98	57311.69	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6525.000***			
			d) Formwork @ 3 per cent on a+b+c				2936.18	
			e) GST @ 12 % on (a+b+c+d)				12097.05	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				22581.16	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				13548.70	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1490.36	
			Cost for 15 cum = a+b+c+d+e+f+g+h				150526.02	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				10035.07	
						say	***10035.00***	
12.8 H		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit ; cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	50.640	9053.98	458493.55	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6340.000***			
			d) Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				22822.74	
			e) GST @ 12 % on (a+b+c+d)				94029.67	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				175522.05	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				105313.23	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				11584.46	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1170030.00	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				9750.25	
						say	***9750.00***	
		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.**					
			Unit = 1 No					
			Taking output = 1 No.					
			a) Material					
			Earth (compacted)	cum	251.200	0.00	0.00	M-092
			Sand bags	each	750.000	9.82	7365.00	M-159
			b) Labour					
			Mate	day	0.400	354.00	141.60	L-12
			Mazdoor for filling sand bags, stitching and placing	day	15.000	310.00	4650.00	L-13
			c) Machinery					
			Crane with grab 1 cum capacity	hour	20.000	1038.94	20778.80	P&M-012
			Consumables @ 2.5 per cent of (c) above				519.47	
			d) GST @ 12 % on (a+b+c)				4014.58	
			e) Overhead charges @ 20 % on (a+b+c+d)				7493.89	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				4496.33	
			g) Cess @ 1% on (a+b+c+d+e+f)				494.60	
			Rate per No. (a+b+c+d+e+f+g)				49954.27	
						say	***49954.00***	
		Note	It is assumed that earth will be available within the working space of crane with grab bucket.					
12.9		**B**	**Assuming depth of water 4.0 m and height of island 4.5 m.**					
			Unit = 1No					
			Taking output = 1 No					
			a) Material					
			Earth (compacted)	cum	904.320	0.00	0.00	M-092
			Sand bags	each	6000.000	9.82	58920.00	M-159
			Wooden ballies 8" Dia and 9 m long	each	95.000	552.21	52459.95	M-194
			Wooden ballies 2" Dia for bracing	metre	190.000	42.48	8071.20	M-193
			b) Labour					
			Mate	day	5.600	354.00	1982.40	L-12
			Mazdoor for piling 8" dia ballies for piling 8" dia ballies	day	18.000	310.00	5580.00	L-13
			Mazdoor for bracing with 2" dia ballies	day	12.000	310.00	3720.00	L-13
			Mazdoor for filling sand bags, stitching and placing	day	110.000	310.00	34100.00	L-13
			c) Machinery					
			Crane with grab 1 cum capacity	hour	50.000	1038.94	51947.00	P&M-012
			Consumables and other arrangements for piling ballies @ 2.5 per cent of (a+b+c).				5419.51	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) GST @ 12 % on (a+b+c)				26664.01	
			e) Overhead charges @ 20 % on (a+b+c+d)				49772.81	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				29863.69	
			g) Cess @ 1% on (a+b+c+d+e+f)				3285.01	
			Rate per No. (a+b+c+d+e+f+g)				331785.58	
						say	***331786.00***	
		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**					
			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	450.000	0.00	0.00	M-092
			Sand bags	each	300.000	9.82	2946.00	M-159
			b) Labour					
			Mate	day	0.240	354.00	84.96	L-12
			Mazdoor for filling sand bags, stitching and placing	day	6.000	310.00	1860.00	L-13
			c) Machinery					
			Front end Loader 1 cum capacity	hour	27.000	1398.23	37752.21	P&M-017
			Tipper 5.5 cum capacity	hour	28.000	779.65	21830.20	P&M-048
			d) GST @ 12 % on (a+b+c)				7736.80	
			e) Overhead charges @ 20 % on (a+b+c+d)				14442.03	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				8665.22	
			g) Cess @ 1% on (a+b+c+d+e+f)				953.17	
			Cost for 30 m (a+b+c+d+e+f+g)				96270.59	
			Rate per m (a+b+c+d+e+f+g)/30				3209.02	
						say	***3209.00***	
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	1.050	48312.00	50727.60	M-179
			Nuts & bolts	Kg	20.000	111.50	2230.00	M-130
			b) Labour					
			(for cutting, bending, making holes, joining, welding and erecting in position)					
			Mate	day	1.320	354.00	467.28	L-12
			Fitter	day	5.500	442.00	2431.00	L-08
			Blacksmith	day	5.500	442.00	2431.00	L-02
			Welder	day	5.500	442.00	2431.00	L-02
			Mazdoor	day	16.500	310.00	5115.00	L-13
			Electrodes, cutting gas and other consumables @ 10 per cent of cost of (a) above				5295.76	
			c) GST @ 12 % on (a+b)				8535.44	
			d) Overhead charges @ 20 % on (a+b+c)				15932.82	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				9559.69	
			f) Cess @ 1% on (a+b+c+d+e)				1051.57	
			Rate per MT (a+b+c+d+e+f)				106208.16	
						say	***106208.00***	
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 © Case I 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)** (excluding GST, OH, CP & Cess)				5849.00	**12.8 (C) Case I**
			d) formwork @ 20 per cent of the cost of concrete				1169.80	
			e) GST @ 12 % on (a+b+c+d)				842.26	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1572.21	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				943.33	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				103.77	
			Rate perm (a+b+c+d+e+f+g+h)				10480.37	
						say	***10480.00***	
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)** (excluding GST, OH, CP & Cess)				5663.00	**12.8 (C) Case II**
			d) formwork @ 20 per cent of the cost of concrete				1132.60	
			e) GST @ 12 % on (a+b+c+d)				815.47	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1522.21	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				913.33	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				100.47	
			Rate perm (a+b+c+d+e+f+g+h)				10147.08	
						say	***10147.00***	
12.11 A		**(ii)**	**RCC M25 Grade**					
			Same as for 12.8 (E) I 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)** (excluding GST, OH, CP & Cess)				6356.00	**Item 12.8 (E) I**
			d) formwork @ 20 per cent of the cost of concrete				1271.20	
			e) GST @ 12 % on (a+b+c+d)				915.26	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1708.49	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1025.10	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				112.76	
			Rate perm (a+b+c+d+e+f+g+h)				11388.81	
						say	***11389.00***	
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)** (excluding GST, OH, CP & Cess)				6268.00	**Item 12.8 (E) II**
			d) formwork @ 20 per cent of the cost of concrete				1253.60	
			e) GST @ 12 % on (a+b+c+d)				902.59	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1684.84	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1010.90	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				111.20	
			Rate perm (a+b+c+d+e+f+g+h)				11231.13	
						say	***11231.00***	
12.11 A		**(iii)**	**RCC M35 Grade**					
			Same as for 12.8 (H) I 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)** (excluding GST, OH, CP & Cess)				6525.00	**Item 12.8 (H) I**
			d) formwork @ 20 per cent of the cost of concrete				1305.00	
			e) GST @ 12 % on (a+b+c+d)				939.60	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1753.92	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1052.35	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				115.76	
			Rate perm (a+b+c+d+e+f+g+h)				11691.63	
						say	***11692.00***	
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)** (excluding GST, OH, CP & Cess)				6443.00	**Item 12.8 (H) II (SA)**
			d) formwork @ 20 per cent of the cost of concrete				1288.60	
			e) GST @ 12 % on (a+b+c+d)				927.79	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1731.88	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1039.13	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				114.30	
			Rate perm (a+b+c+d+e+f+g+h)				11544.70	
						say	***11545.00***	
		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) (SA) 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)** (excluding GST, OH, CP & Cess)				5072.00	**Item 12.8 A (SA)**
			d) formwork @ 10 per cent of the cost of concrete				507.20	
			e) GST @ 12 % on (a+b+c+d)				669.50	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1249.74	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				749.84	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				82.48	
			Rate perm (a+b+c+d+e+f+g+h)				8330.76	
						say	***8331.00***	
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.					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery **(a+b+c)** (excluding GST, OH, CP & Cess)				5649.00	Item 12.8 (B)
			d) formwork @ 10 per cent of the cost of concrete				564.90	
			e) GST @ 12 % on (a+b+c+d)				745.67	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1391.91	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				835.15	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				91.87	
			Rate perm (a+b+c+d+e+f+g+h)				9278.50	
						say	***9279.00***	
12.11 B		**(iii)**	**RCC M20 Grade**					
			Same as for 12.8 (C) I 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)** (excluding GST, OH, CP & Cess)				5849.00	Item 12.8 (C) I
			d) formwork @ 10 per cent of the cost of concrete				584.90	
			e) GST @ 12 % on (a+b+c+d)				772.07	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1441.19	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				864.72	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				95.12	
			Rate perm (a+b+c+d+e+f+g+h)				9607.00	
						say	***9607.00***	
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)**				5663.00	Item 12.8 (C) II (SA)
			d) formwork @ 10 per cent of the cost of concrete				566.30	
			e) GST @ 12 % on (a+b+c+d)				747.52	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1395.36	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				837.22	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				92.09	
			Rate perm (a+b+c+d+e+f+g+h)				9301.49	
						say	***9301.00***	
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)** (excluding GST, OH, CP & Cess)				6150.00	Item 12.8 (D) I
			d) formwork @ 10 per cent of the cost of concrete				615.00	
			e) GST @ 12 % on (a+b+c+d)				811.80	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1515.36	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				909.22	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				100.01	
			Rate perm (a+b+c+d+e+f+g+h)				10101.39	
						say	***10101.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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)** (excluding GST, OH, CP & Cess)				5967.00	Item 12.8 (D) II (SA)
			d) formwork @ 10 per cent of the cost of concrete				596.70	
			e) GST @ 12 % on (a+b+c+d)				787.64	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1470.27	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				882.16	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				97.04	
			Rate perm (a+b+c+d+e+f+g+h)				9800.81	
						say	***9801.00***	
'12.11 B		(v)	**RCC M25 Grade**					
			Same as for 12.8 (E) I 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)** (excluding GST, OH, CP & Cess)				6356.00	Item 12.8 (E) I
			d) formwork @ 10 per cent of the cost of concrete				635.60	
			e) GST @ 12 % on (a+b+c+d)				838.99	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1566.12	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				939.67	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				103.36	
			Rate perm (a+b+c+d+e+f+g+h)				10439.74	
						say	***10440.00***	
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)** (excluding GST, OH, CP & Cess)				6268.00	Item 12.8 (E) II
			d) formwork @ 10 per cent of the cost of concrete				626.80	
			e) GST @ 12 % on (a+b+c+d)				827.38	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1544.44	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				926.66	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				101.93	
			Rate perm (a+b+c+d+e+f+g+h)				10295.21	
						say	***10295.00***	
'12.11 B		(vi)	**PCC M30 Grade**					
			Same as for 12.8 (F) I 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) (excluding GST, OH, CP & Cess)				6204.00	Item 12.8 (F) I
			d) formwork @ 10 per cent of the cost of concrete				620.40	
			e) GST @ 12 % on (a+b+c+d)				818.93	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1528.67	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				917.20	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				100.89	
			Rate perm (a+b+c+d+e+f+g+h)				10190.09	
						say	***10190.00***	
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)** (excluding GST, OH, CP & Cess)				6016.00	Item 12.8 (F) II

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) formwork @ 10 per cent of the cost of concrete				601.60	
			e) GST @ 12 % on (a+b+c+d)				794.11	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1482.34	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				889.41	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				97.83	
			Rate perm (a+b+c+d+e+f+g+h)				9881.29	
						say	***9881.00***	
'12.11 B		**(vii)**	**RCC M30 Grade**					
			Same as for 12.8 (G) I 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)** (excluding GST, OH, CP & Cess)				6387.00	**Item 12.8 (G) I**
			d) formwork @ 10 per cent of the cost of concrete				638.70	
			e) GST @ 12 % on (a+b+c+d)				843.08	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1573.76	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				944.25	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				103.87	
			Rate perm (a+b+c+d+e+f+g+h)				10490.66	
						say	***10491.00***	
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)** (excluding GST, OH, CP & Cess)				6201.00	**Item 12.8 (G) II**
			d) formwork @ 10 per cent of the cost of concrete				620.10	
			e) GST @ 12 % on (a+b+c+d)				818.53	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1527.93	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				916.76	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				100.84	
			Rate perm (a+b+c+d+e+f+g+h)				10185.16	
						say	***10185.00***	
'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)** (excluding GST, OH, CP & Cess)				6525.00	**12.8 (H)**
			d) formwork @ 10 per cent of the cost of concrete				652.50	
			e) GST @ 12 % on (a+b+c+d)				861.30	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1607.76	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				964.66	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				106.11	
			Rate perm (a+b+c+d+e+f+g+h)				10717.33	
						say	***10717.00***	
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) (excluding GST, OH, CP & Cess)				6443.00	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) formwork @ 10 per cent of the cost of concrete				644.30	
			e) GST @ 12 % on (a+b+c+d)				850.48	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1587.56	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				952.53	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				104.78	
			Rate perm (a+b+c+d+e+f+g+h)				10582.65	
						say	***10583.00***	
'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	51.600	9053.98	467185.37	M-081
			Coarse Sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture	kg	206.000	61.06	12578.36	M-180
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Meson	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.000	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.000	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne. km	300xL	18.94	0.00	Lead= 0 , P&M-050
			Concrete Pump	hour	6.000	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***52136.000***			
			d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery				78202.80	
			e) GST @ 12 % on (a+b+c+d)				103227.70	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				192691.71	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				115615.02	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12717.65	
			cost of 120 cum = a+b+c+d+e+f+g+h				1284482.91	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10704.02	
						say	***10704.00***	
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	5.550	9053.98	50249.59	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm Aggregate	cum	5.400	1393.81	7526.57	M-055

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			20 mm Aggregate	cum	5.400	1784.07	9633.98	M-053
			10 mm Aggregate	cum	2.700	1951.33	5268.59	M-051
			Admixture	Kg	18.600	61.06	1135.72	M-180
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.000	433.63	2601.78	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6134.000***			
			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..				4252.90	
			d) GST @ 12 % on (a+b+c)				11550.72	
			e) Overhead charges @ 20 % on (a+b+c+d)				21561.35	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				12936.81	
			g) Cess @ 1% on (a+b+c+d+e+f)				1423.05	
			cost of 15 cum = a+b+c+d+e+f+g				143727.95	
			Rate per cum = (a+b+c+d+e+f+g)/15				9581.86	
						say	***9582.00***	
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	44.400	9053.98	401996.71	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture	Kg	148.800	61.06	9085.73	M-180
			b) Labour					
			Mate	day	0.880	354.00	311.52	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***5945.000***			

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			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..				32535.04	
			d) GST @ 12 % on (a+b+c)				89507.51	
			e) Overhead charges @ 20 % on (a+b+c+d)				167080.69	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				100248.41	
			g) Cess @ 1% on (a+b+c+d+e+f)				11027.33	
			cost of 120 cum = a+b+c+d+e+f+g				1113759.88	
			Rate per cum = (a+b+c+d+e+f+g)/120				9281.33	
						say	***9281.00***	
'12.11 C		**(ii)**	**PCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.990	9053.98	54233.34	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm Aggregate	cum	5.400	1393.81	7526.57	M-055
			20 mm Aggregate	cum	5.400	1784.07	9633.98	M-053
			10 mm Aggregate	cum	2.700	1951.33	5268.59	M-051
			Admixture	Kg	21.600	61.06	1318.90	M-180
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.000	433.63	2601.78	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6412.000***			
			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..				4461.25	
			d) GST @ 12 % on (a+b+c)				12075.76	
			e) Overhead charges @ 20 % on (a+b+c+d)				22541.41	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13524.85	
			g) Cess @ 1% on (a+b+c+d+e+f)				1487.73	
			cost of 15 cum = a+b+c+d+e+f+g				150261.05	
			Rate per cum = (a+b+c+d+e+f+g)/15				10017.40	
						say	***10017.00***	
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	47.880	9053.98	433504.56	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture	Kg	172.800	61.06	10551.17	M-180
			b) Labour					
			Mate	day	0.880	354.00	311.52	L-12

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6220.000***			
			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.				34183.70	
			d) GST @ 12 % on (a+b+c)				93662.15	
			e) Overhead charges @ 20 % on (a+b+c+d)				174836.01	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				104901.61	
			g) Cess @ 1% on (a+b+c+d+e+f)				11539.18	
			cost of 120 cum = a+b+c+d+e+f+g+h				1165456.84	
			Rate per cum = (a+b+c+d+e+f+g)/120				9712.14	
						say	***9712.00***	
'12.11 C		**(iii)**	**PCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.080	9053.98	55048.20	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm Aggregate	cum	5.400	1393.81	7526.57	M-055
			20 mm Aggregate	cum	5.400	1784.07	9633.98	M-053
			10 mm Aggregate	cum	2.700	1951.33	5268.59	M-051
			Admixture	Kg	21.600	61.06	1318.90	M-180
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.000	433.63	2601.78	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6466.000***			
			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.				4501.99	
			d) GST @ 12 % on (a+b+c)				12178.43	
			e) Overhead charges @ 20 % on (a+b+c+d)				22733.07	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13639.84	
			g) Cess @ 1% on (a+b+c+d+e+f)				1500.38	
			cost of 15 cum = a+b+c+d+e+f+g				151538.62	
			Rate per cum = (a+b+c+d+e+f+g)/15				10102.57	
						say	***10103.00***	
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	48.640	9053.98	440385.59	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture	Kg	172.800	61.06	10551.17	M-180
			b) Labour					
			Mate	day	0.880	354.00	311.52	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6277.000***			
			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..				34527.75	
			d) GST @ 12 % on (a+b+c)				94529.16	
			e) Overhead charges @ 20 % on (a+b+c+d)				176454.43	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				105872.66	
			g) Cess @ 1% on (a+b+c+d+e+f)				11645.99	
			cost of 120 cum = a+b+c+d+e+f+g+h				1176245.21	
			Rate per cum = (a+b+c+d+e+f+g)/120				9802.04	
						say	***9802.00***	
'12.11 C		**(iv)**	**PCC Grade M35**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.290	9053.98	56949.53	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm Aggregate	cum	5.400	1393.81	7526.57	M-055
			20 mm Aggregate	cum	5.400	1784.07	9633.98	M-053
			10 mm Aggregate	cum	2.700	1951.33	5268.59	M-051
			Admixture	Kg	21.600	61.06	1318.90	M-180
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.000	433.63	2601.78	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6593.000***			
			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.				4597.06	
			d) GST @ 12 % on (a+b+c)				12418.00	
			e) Overhead charges @ 20 % on (a+b+c+d)				23180.26	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13908.16	
			g) Cess @ 1% on (a+b+c+d+e+f)				1529.90	
			cost of 15 cum = a+b+c+d+e+f+g				154519.62	
			Rate per cum = (a+b+c+d+e+f+g)/15				10301.31	
						say	***10301.00***	
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	50.280	9053.98	455234.11	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture	Kg	172.800	61.06	10551.17	M-180
			b) Labour					
			Mate	day	0.880	354.00	311.52	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		***6401.000***			
			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.				35270.18	
			d) GST @ 12 % on (a+b+c)				96400.07	
			e) Overhead charges @ 20 % on (a+b+c+d)				179946.80	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				107968.08	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			g) Cess @ 1% on (a+b+c+d+e+f)				11876.49	
			cost of 120 cum = a+b+c+d+e+f+g				1199525.36	
			Rate per cum = (a+b+c+d+e+f+g)/120				9996.04	
						say	***9996.00***	
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)** (excluding GST, OH, CP & Cess)				6134.00	**Item 12.11 C (i) I**
			d) GST @ 12 % on (a+b+c)				736.08	
			e) Overhead charges @ 20 % on (a+b+c+d)				1374.02	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				824.41	
			g) Cess @ 1% on (a+b+c+d+e+f)				90.69	
			Rate per cum = (a+b+c+d+e+f+g)				9159.20	
						say	***9159.00***	
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)** (excluding GST, OH, CP & Cess)				5945.00	**Item 12.11 C (i) II**
			d) GST @ 12 % on (a+b+c)				713.40	
			e) Overhead charges @ 20 % on (a+b+c+d)				1331.68	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				799.01	
			g) Cess @ 1% on (a+b+c+d+e+f)				87.89	
			Rate per cum = (a+b+c+d+e+f+g)				8876.98	
						say	***8877.00***	
'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)** (excluding GST, OH, CP & Cess)				6412.00	**Item 12.11 C (ii) I**
			d) GST @ 12 % on (a+b+c)				769.44	
			e) Overhead charges @ 20 % on (a+b+c+d)				1436.29	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				861.77	
			g) Cess @ 1% on (a+b+c+d+e+f)				94.80	
			Rate per cum = (a+b+c+d+e+f+g)				9574.30	
						say	***9574.00***	
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)**				6220.00	**Item 12.11 C (ii) II**
			d) GST @ 12 % on (a+b+c)				746.40	
			e) Overhead charges @ 20 % on (a+b+c+d)				1393.28	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				835.97	
			g) Cess @ 1% on (a+b+c+d+e+f)				91.96	
			Rate per cum = (a+b+c+d+e+f+g)				9287.61	
						say	***9288.00***	
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)** (excluding GST, OH, CP & Cess)				6466.00	**Item 12.11 C (iii) I**

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) GST @ 12 % on (a+b+c)				775.92	
			e) Overhead charges @ 20 % on (a+b+c+d)				1448.38	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				869.03	
			g) Cess @ 1% on (a+b+c+d+e+f)				95.59	
			Rate per cum = (a+b+c+d+e+f+g)				9654.92	
						say	***9655.00***	
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) (excluding GST, OH, CP & Cess)				6277.00	**Item 12.11 C (iii) II**
			d) GST @ 12 % on (a+b+c)				753.24	
			e) Overhead charges @ 20 % on (a+b+c+d)				1406.05	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				843.63	
			g) Cess @ 1% on (a+b+c+d+e+f)				92.80	
			Rate per cum = (a+b+c+d+e+f+g)				9372.72	
						say	***9373.00***	
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)** (excluding GST, OH, CP & Cess)				5072.00	**Item 12.8 (a)**
			d) GST @ 12 % on (a+b+c)				608.64	
			e) Overhead charges @ 20 % on (a+b+c+d)				1136.13	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				681.68	
			g) Cess @ 1% on (a+b+c+d+e+f)				74.98	
			Rate per cum = (a+b+c+d+e+f+g)				7573.43	
						say	***7573.00***	
'12.11 E		**(ii)**	**Grade M20 PCC**					
			Same as Item 12.8(b) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery **(a+b+c)**				5649.00	**Item 12.8 (b)**
			d) GST @ 12 % on (a+b+c)				677.88	
			e) Overhead charges @ 20 % on (a+b+c+d)				1265.38	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				759.23	
			g) Cess @ 1% on (a+b+c+d+e+f)				83.51	
			Rate per cum = (a+b+c+d+e+f+g)				8435.00	
						say	***8435.00***	
'12.11 E		**(iii)**	**Grade M25 PCC**					
			Same as Item 12.8 (d) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery **(a+b+c)** (excluding GST, OH, CP & Cess)				6150.00	**Item 12.8 (D) I**
			d) GST @ 12 % on (a+b+c)				738.00	
			e) Overhead charges @ 20 % on (a+b+c+d)				1377.60	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				826.56	
			g) Cess @ 1% on (a+b+c+d+e+f)				90.92	
			Rate per cum = (a+b+c+d+e+f+g)				9183.08	
						say	***9183.00***	
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) (excluding GST, OH, CP & Cess)				5967.00	**Item 12.8 (D) II (SA)**
			d) GST @ 12 % on (a+b+c)				716.04	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Overhead charges @ 20 % on (a+b+c+d)				1336.61	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				801.97	
			g) Cess @ 1% on (a+b+c+d+e+f)				88.22	
			Rate per cum = (a+b+c+d+e+f+g)				8909.84	
						say	***8910.00***	
'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)** (excluding GST, OH, CP & Cess)				6204.00	Item 12.8 (F) I
			d) GST @ 12 % on (a+b+c)				744.48	
			e) Overhead charges @ 20 % on (a+b+c+d)				1389.70	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				833.82	
			g) Cess @ 1% on (a+b+c+d+e+f)				91.72	
			Rate per cum = (a+b+c+d+e+f+g)				9263.72	
						say	***9264.00***	
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)** (excluding GST, OH, CP & Cess)				6016.00	Item 12.8 (F) II
			d) GST @ 12 % on (a+b+c)				721.92	
			e) Overhead charges @ 20 % on (a+b+c+d)				1347.58	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				808.55	
			g) Cess @ 1% on (a+b+c+d+e+f)				88.94	
			Rate per cum = (a+b+c+d+e+f+g)				8982.99	
						say	***8983.00***	
12.11		**F**	**Well cap**					
		(i)	**RCC Grade M20**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.120	9053.98	46356.38	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Form Work @ 4 per cent of a+b+c				3476.69	
			d) GST @ 12 % on (a+b+c)				10847.27	
			e) Overhead charges @ 20 % on (a+b+c+d)				20248.24	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				12148.95	
			g) Cess @ 1% on (a+b+c+d+e+f)				1336.38	
			cost of 15 cum = a+b+c+d+e+f+g				134974.79	
			Rate per cum = (a+b+c+d+e+f+g)/15				8998.32	
						say	***8998.00***	
12.11 F (i)		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	40.920	9053.98	370488.86	M-081

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader (capacity 1 cum)	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Formwork @ 4 per cent of (a+b+c)				26910.13	
			d) GST @ 12 % on (a+b+c)				83959.59	
			e) Overhead charges @ 20 % on (a+b+c+d)				156724.58	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				94034.75	
			g) Cess @ 1% on (a+b+c+d+e+f)				10343.82	
			cost of 120 cum = a+b+c+d+e+f+g				1044726.03	
			Rate per cum = (a+b+c+d+e+f+g)/120				8706.05	
						say	***8706.00***	
12.11 F		**(ii)**	**RCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.050	9053.98	54776.58	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Form Work @ 3.75 per cent of a+b+c				3575.15	
			d) GST @ 12 % on (a+b+c)				11869.51	
			e) Overhead charges @ 20 % on (a+b+c+d)				22156.42	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13293.85	
			g) Cess @ 1% on (a+b+c+d+e+f)				1462.32	
			cost of 15 cum = a+b+c+d+e+f+g				147694.71	
			Rate per cum = (a+b+c+d+e+f+g)/15				9846.31	
						say	***9846.00***	
12.11 F (ii)		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.400	9053.98	438212.63	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader (capacity 1 cum)	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Formwork @ 3.75 per cent of (a+b+c)				27767.88	
			d) GST @ 12 % on (a+b+c)				92189.38	
			e) Overhead charges @ 20 % on (a+b+c+d)				172086.84	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				103252.10	
			g) Cess @ 1% on (a+b+c+d+e+f)				11357.73	
			cost of 120 cum = a+b+c+d+e+f+g				1147130.86	
			Rate per cum = (a+b+c+d+e+f+g)/120				9559.42	
						say	***9559.00***	
12.11 F		**(iii)**	**RCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.100	9053.98	55229.28	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Formwork @ 3.5 per cent of (a+b+c)				3352.66	
			d) GST @ 12 % on (a+b+c)				11897.14	
			e) Overhead charges @ 20 % on (a+b+c+d)				22207.99	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13324.80	
			g) Cess @ 1% on (a+b+c+d+e+f)				1465.73	
			cost of 15 cum = a+b+c+d+e+f+g				148038.48	
			Rate per cum = (a+b+c+d+e+f+g)/15				9869.23	
						say	***9869.00***	
12.11 F (iii)		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.790	9053.98	441743.68	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader (capacity 1 cum)	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Formwork @ 3.5 per cent of (a+b+c)				26040.28	
			d) GST @ 12 % on (a+b+c)				92405.79	
			e) Overhead charges @ 20 % on (a+b+c+d)				172490.81	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				103494.49	
			g) Cess @ 1% on (a+b+c+d+e+f)				11384.39	
			cost of 120 cum = a+b+c+d+e+f+g				1149823.74	
			Rate per cum = (a+b+c+d+e+f+g)/120				9581.86	
						say	***9582.00***	
12.11 F		**(iv)**	**RCC Grade M35**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.330	9053.98	57311.69	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Formwork @ 3 per cent of (a+b+c)				2936.18	
			d) GST @ 12 % on (a+b+c)				12097.05	
			e) Overhead charges @ 20 % on (a+b+c+d)				22581.16	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13548.70	
			g) Cess @ 1% on (a+b+c+d+e+f)				1490.36	
			cost of 15 cum = a+b+c+d+e+f+g				150526.02	
			Rate per cum = (a+b+c+d+e+f+g)/15				10035.07	
						say	***10035.00***	
12.11 F (iv)		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.640	9053.98	458493.55	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader (capacity 1 cum)	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Formwork @ 3 per cent of (a+b+c)				22822.74	
			d) GST @ 12 % on (a+b+c)				94029.67	
			e) Overhead charges @ 20 % on (a+b+c+d)				175522.05	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				105313.23	
			g) Cess @ 1% on (a+b+c+d+e+f)				11584.46	
			cost of 120 cum = a+b+c+d+e+f+g				1170030.00	
			Rate per cum = (a+b+c+d+e+f+g)/120				9750.25	
						say	***9750.00***	
		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.					
'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	52.200	9053.98	472617.76	M-081
			Coarse Sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture	kg	206.000	61.06	12578.36	M-180
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.000	849.56	5097.36	P&M-080
			Loader 1 cum capacity	hour	6.000	1398.23	8389.38	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1132.74	16991.10	P&M-049
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne. km	300.L	18.94	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.000	2576.11	15456.66	P&M-007
			Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				23623.81	
			d) GST @ 12 % on (a+b+c)				97330.11	
			e) Overhead charges @ 20 % on (a+b+c+d)				181682.87	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				109009.72	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			g) Cess @ 1% on (a+b+c+d+e+f)				11991.07	
			cost of 120 cum = a+b+c+d+e+f+g				1211098.00	
			Rate per cum = (a+b+c+d+e+f+g)/120				10092.48	
						say	***10092.00***	
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	0.120	354.00	42.48	L-12
			Sinker (skilled)	day	1.000	442.00	442.00	L-15
			Sinking helper (semi-skilled)	day	2.000	354.00	708.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	2.000	976.11	1952.22	P&M-075
			Consumables in sinking @10 per cent of (b)				195.22	
			c) GST @ 12 % on (a+b)				400.79	
			d) Overhead charges @ 20 % on (a+b+c)				748.14	
			e) Contractor's profit @ 10 % on (a+b+c+d)				448.89	
			f) Cess @ 1% on (a+b+c+d+e)				49.38	
			Rate per metre = (a+b+c+d+e+f)				4987.12	
						say	***4987.00***	
12.12 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.33 m per hour.					
			a) Labour					
			Mate	day	0.150	354.00	53.10	L-12
			Sinker	day	1.250	442.00	552.50	L-15
			Sinking helper (semi-skilled)	day	2.500	354.00	885.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.000	976.11	2928.33	P&M-075
			Consumables in sinking @10 per cent of (b)				292.83	
			c) GST @ 12 % on (a+b)				565.41	
			d) Overhead charges @ 20 % on (a+b+c)				1055.43	
			e) Contractor's profit @ 10 % on (a+b+c+d)				633.26	
			f) Cess @ 1% on (a+b+c+d+e)				69.66	
			Rate per metre = (a+b+c+d+e+f)				7035.52	
						say	***7036.00***	
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%	7388.000			
			12th m	5%	7757.000			
			13th m	5%	8145.000			
			14th m	5%	8552.000			
			15th m	5%	8980.000			
			16th m	5%	9429.000			
			17th m	5%	9900.000			
			18th m	5%	10395.000			
			19th m	5%	10915.000			

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			20th m	5%	11461.000			
			Total Cost from 10m upto 20m		92922.000			
			Avg Rate per metre		***9292.000***			
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.			Including 20% for Kentledge		
			21st m	7.5%	12321.000	14785.00		
			22nd m	7.5%	13245.000	15894.00		
			23rd m	7.5%	14238.000	17086.00		
			24th m	7.5%	15306.000	18367.00		
			25th m	7.5%	16454.000	19745.00		
			26th m	7.5%	17688.000	21226.00		
			27th m	7.5%	19015.000	22818.00		
			28th m	7.5%	20441.000	24529.00		
			29th m	7.5%	21974.000	26369.00		
			30th m	7.5%	23622.000	28346.00		
			Total Cost from 20m upto 30m		174304.000	209165.00		
			Avg Rate per metre		***17430.000***	***20917.00***		
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.			Including 20% for Kentledge		
			31st m	10%	25984.000	31181.00		
			32nd	10%	28582.000	34298.00		
			33rd m	10%	31440.000	37728.00		
			34th m	10%	34584.000	41501.00		
			35th m	10%	38042.000	45650.00		
			36th m	10%	41846.000	50215.00		
			37th m	10%	46031.000	55237.00		
			38th m	10%	50634.000	60761.00		
			39th m	10%	55697.000	66836.00		
			40th m	10%	61267.000	73520.00		
			Total Cost from 30m upto 40m		414107.000	496927.00		
			Avg Rate per metre		***41411.000***	***49693.00***		
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	0.150	354.00	53.10	L-12
			Sinker (skilled)	day	1.500	442.00	663.00	L-15
			Sinking helper (semi-skilled)	day	2.250	354.00	796.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.000	976.11	2928.33	P&M-075
			Consumables in sinking @ 10 per cent of (b)				292.83	
			c) GST @ 12 % on (a+b)				568.05	
			d) Overhead charges @ 20 % on (a+b+c)				1060.36	
			e) Contractor's profit @ 10 % on (a+b+c+d)				636.22	
			f) Cess @ 1% on (a+b+c+d+e)				69.98	
			Rate per metre = (a+b+c+d+e+f)				7068.37	
						say	***7068.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.12 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.17 m per hour.					
			a) Labour					
			Mate	day	0.300	354.00	106.20	L-12
			Sinker	day	3.000	442.00	1326.00	L-15
			Sinking helper (semi-skilled)	day	4.500	354.00	1593.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	2.000	634.51	1269.02	P&M-063
			Consumables in sinking @ 10 per cent of (b)				712.57	
			c) GST @ 12 % on (a+b)				1303.61	
			d) Overhead charges @ 20 % on (a+b+c)				2433.41	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1460.05	
			f) Cess @ 1% on (a+b+c+d+e)				160.61	
			Rate per metre = (a+b+c+d+e+f)				16221.13	
						say	***16221.00***	
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.				Including for dewatering @ 5% of cost, if required	
			11th m	5%	17032.000	17884.00		
			12th m	5%	17884.000	18778.00		
			13th m	5%	18778.000	19717.00		
			14th m	5%	19717.000	20703.00		
			15th m	5%	20703.000	21738.00		
			16th m	5%	21738.000	22825.00		
			17th m	5%	22825.000	23966.00		
			18th m	5%	23966.000	25164.00		
			19th m	5%	25164.000	26422.00		
			20th m	5%	26422.000	27743.00		
			Total Cost from 10m upto 20m		214229.000	224940.00		
			Avg Rate per metre		***21423.000***	***22494.00***		
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).			Including 25% for Kentledge	Including 5% for dewatering, if required	
			21st m	7.5%	28404.000	35505.00	37280.00	
			22nd m	7.5%	30534.000	38168.00	40076.00	
			23rd m	7.5%	32824.000	41030.00	43082.00	
			24th m	7.5%	35286.000	44108.00	46313.00	
			25th m	7.5%	37932.000	47415.00	49786.00	
			26th m	7.5%	40777.000	50971.00	53520.00	
			27th m	7.5%	43835.000	54794.00	57534.00	
			28th m	7.5%	47123.000	58904.00	61849.00	
			29th m	7.5%	50657.000	63321.00	66487.00	
			30th m	7.5%	54456.000	68070.00	71474.00	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Total Cost from 20m upto 30m		401828.000	502286.00	527401.00	
			Avg Rate per metre		***40183.000***	***50229.00***	***52740.00***	
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).			Including 20% for Kentledge	Including 5% for dewatering, if required	
			31st m	10%	59902.000	71882.00	75476.00	
			32nd	10%	65892.000	79070.00	83024.00	
			33rd m	10%	72481.000	86977.00	91326.00	
			34th m	10%	79729.000	95675.00	100459.00	
			35th m	10%	87702.000	105242.00	110504.00	
			36th m	10%	96472.000	115766.00	121554.00	
			37th m	10%	106119.000	127343.00	133710.00	
			38th m	10%	116731.000	140077.00	147081.00	
			39th m	10%	128404.000	154085.00	161789.00	
			40th m	10%	141244.000	169493.00	177968.00	
			Total Cost from 30m upto 40m		954676.000	1145610.00	1202891.00	
			Avg Rate per metre		***95468.000***	***114561.00***	***120289.00***	
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	0.920	354.00	325.68	L-12
			Sinker (skilled)	day	3.000	442.00	1326.00	L-15
			Sinking helper (semi-skilled)	day	20.000	354.00	7080.00	L-14
			Diver	day	0.500	796.00	398.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.000	976.11	3904.44	P&M-075
			Air compressor with pneumatic breakers	hour	3.500	634.51	2220.79	P&M-063
			Consumables in sinking @ 10 per cent of (b)				612.52	
			Add for dewatering @ of 5 per cent of (a+b), if required				793.37	
			c) GST @ 12 % on (a+b)				1999.30	
			d) Overhead charges @ 20 % on (a+b+c)				3732.02	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2239.21	
			f) Cess @ 1% on (a+b+c+d+e)				246.31	
			Rate per metre = (a+b+c+d+e+f)				24877.64	
						say	***24878.00***	
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	4.000	164.60	658.40	M-104
			Electric Detonators	each	18.000	11.04	198.72	M-094/100
			b) Labour					
			Mate	day	1.560	354.00	552.24	L-12
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	12.000	310.00	3720.00	L-13
			Mazdoor (Skilled)	day	4.000	442.00	1768.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.000	634.51	1269.02	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				698.12	
			Consumables in sinking @ 10 per cent of cost of (b).				712.57	
			d) GST @ 12 % on (a+b+c)				1947.63	
			e) Overhead charges @ 20 % on (a+b+c+d)				3635.57	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2181.34	
			g) Cess @ 1% on (a+b+c+d+e+f)				239.95	
			Rate per metre = (a+b+c+d+e+f+g)				24234.72	
						say	***24235.00***	
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	0.150	354.00	53.10	L-12
			Sinker (skilled)	day	1.250	442.00	552.50	L-15
			Sinking helper (semi-skilled)	day	2.500	354.00	885.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	3.250	976.11	3172.36	P&M-075
			Consumables in sinking @10 per cent of (b)				317.24	
			c) GST @ 12 % on (a+b)				597.62	
			d) Overhead charges @ 20 % on (a+b+c)				1115.56	
			e) Contractor's profit @ 10 % on (a+b+c+d)				669.34	
			f) Cess @ 1% on (a+b+c+d+e)				73.63	
			Rate per metre = (a+b+c+d+e+f)				7436.35	
						say	***7436.00***	
12.13 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.180	354.00	63.72	L-12
			Sinker	day	1.500	442.00	663.00	L-15
			Sinking helper (semi-skilled)	day	3.000	354.00	1062.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.500	976.11	4392.50	P&M-075
			Consumables in sinking @10 per cent of (b)				439.25	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) GST @ 12 % on (a+b)				794.46	
			d) Overhead charges @ 20 % on (a+b+c)				1482.99	
			e) Contractor's profit @ 10 % on (a+b+c+d)				889.79	
			f) Cess @ 1% on (a+b+c+d+e)				97.88	
			Rate per metre = (a+b+c+d+e+f)				9885.59	
						say	***9886.00***	
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%	10380.000			
			12th m	5%	10899.000			
			13th m	5%	11444.000			
			14th m	5%	12016.000			
	0.165		15th m	5%	12617.000			
			16th m	5%	13248.000			
			17th m	5%	13910.000			
			18th m	5%	14606.000			
			19th m	5%	15336.000			
			20th m	5%	16103.000			
			Total Cost from 10m upto 20m		130559.000			
			Avg Rate per metre		***13056.000***			
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).			Including 20% for Kentledge		
			21st m	7.5%	17311.000	20773.00		
			22nd m	7.5%	18609.000	22331.00		
			23rd m	7.5%	20005.000	24006.00		
			24th m	7.5%	21505.000	25806.00		
			25th m	7.5%	23118.000	27742.00		
			26th m	7.5%	24852.000	29822.00		
			27th m	7.5%	26716.000	32059.00		
			28th m	7.5%	28720.000	34464.00		
			29th m	7.5%	30874.000	37049.00		
			30th m	7.5%	33190.000	39828.00		
			Total Cost from 20m upto 30m		244900.000	293880.00		
			Avg Rate per metre		***24490.000***	***29388.00***		
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.			Including 20% for Kentledge		
			31st m	10%	36509.000	43811.00		
			32nd	10%	40160.000	48192.00		
			33rd m	10%	44176.000	53011.00		
			34th m	10%	48594.000	58313.00		
			35th m	10%	53453.000	64144.00		
			36th m	10%	58798.000	70558.00		
			37th m	10%	64678.000	77614.00		
			38th m	10%	71146.000	85375.00		
			39th m	10%	78261.000	93913.00		
			40th m	10%	86087.000	103304.00		
			Total Cost from 30m upto 40m		581862.000	698235.00		
			Avg Rate per metre		***58186.000***	***69824.00***		
12.13		**B**	**Clayey Soil (7m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 cum					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(I)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.180	354.00	63.72	L-12
			Sinker (skilled)	day	1.500	442.00	663.00	L-15
			Sinking helper (semi-skilled)	day	3.000	354.00	1062.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.500	976.11	4392.50	P&M-075
			Consumables in sinking @ 10 per cent of (b)				439.25	
			c) GST @ 12 % on (a+b)				794.46	
			d) Overhead charges @ 20 % on (a+b+c)				1482.99	
			e) Contractor's profit @ 10 % on (a+b+c+d)				889.79	
			f) Cess @ 1% on (a+b+c+d+e)				97.88	
			Rate per metre = (a+b+c+d+e+f)				9885.59	
						say	***9886.00***	
12.13 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.17 m per hour.					
			a) Labour					
			Mate	day	0.260	354.00	92.04	L-12
			Sinker	day	2.000	442.00	884.00	L-15
			Sinking helper (semi-skilled)	day	4.000	354.00	1416.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.250	634.51	585.67	P&M-063
			Consumables in sinking @ 10 per cent of (b)				644.23	
			c) GST @ 12 % on (a+b)				1137.43	
			d) Overhead charges @ 20 % on (a+b+c)				2123.21	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1273.92	
			f) Cess @ 1% on (a+b+c+d+e)				140.13	
			Rate per metre = (a+b+c+d+e+f)				14153.29	
						say	***14153.00***	
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.			Including for dewatering @ 5% of cost, if required		
			11th m	5%	14861.000	15604.00		
			12th m	5%	15604.000	16384.00		
			13th m	5%	16384.000	17203.00		
			14th m	5%	17203.000	18063.00		
			15th m	5%	18063.000	18966.00		
			16th m	5%	18966.000	19914.00		
			17th m	5%	19914.000	20910.00		
			18th m	5%	20910.000	21956.00		
			19th m	5%	21956.000	23054.00		
			20th m	5%	23054.000	24207.00		
			Total Cost from 10m upto 20m		186915.000	196261.00		
			Avg Rate per metre		***18692.000***	***19626.00***		
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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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			Including 25% for Kentledge	Including 5% for dewatering, if required	
			31st m	7.5%	24783.000	30979.00	32528.00	
			32nd	7.5%	26642.000	33303.00	34968.00	
			33rd m	7.5%	28640.000	35800.00	37590.00	
			34th m	7.5%	30788.000	38485.00	40409.00	
			35th m	7.5%	33097.000	41371.00	43440.00	
			36th m	7.5%	35579.000	44474.00	46698.00	
			37th m	7.5%	38247.000	47809.00	50199.00	
			38th m	7.5%	41116.000	51395.00	53965.00	
			39th m	7.5%	44200.000	55250.00	58013.00	
			40th m	7.5%	47515.000	59394.00	62364.00	
			Total Cost from 30m upto 40m		350607.000	438260.00	460174.00	
			Avg Rate per metre		***35061.000***	***43826.00***	***46017.00***	
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).			Including 20% for Kentledge	Including 5% for dewatering, if required	
			31st m	10%	52267.000	62720.00	65856.00	
			32nd	10%	57494.000	68993.00	72443.00	
			33rd m	10%	63243.000	75892.00	79687.00	
			34th m	10%	69567.000	83480.00	87654.00	
			35th m	10%	76524.000	91829.00	96420.00	
			36th m	10%	84176.000	101011.00	106062.00	
			37th m	10%	92594.000	111113.00	116669.00	
			38th m	10%	101853.000	122224.00	128335.00	
			39th m	10%	112038.000	134446.00	141168.00	
			40th m	10%	123242.000	147890.00	155285.00	
			Total Cost from 30m upto 40m		832998.000	999598.00	1049579.00	
			Avg Rate per metre		***83300.000***	***99960.00***	***104958.00***	
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	0.580	354.00	205.32	L-12
			Sinker (skilled)	day	4.000	442.00	1768.00	L-15
			Sinking helper (semi-skilled)	day	10.000	354.00	3540.00	L-14
			Diver	day	0.750	796.00	597.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.500	976.11	4392.50	P&M-075
			Air compressor with pneumatic breakers	hour	3.750	634.51	2379.41	P&M-063
			Consumables in sinking @ 10 per cent of (b)				677.19	
			Add for dewatering @ of 5 per cent of (a+b), if required				677.97	
			c) GST @ 12 % on (a+b)				1708.49	
			c) Overhead charges @ 20 % on (a+b)				3189.18	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Contractor's profit @ 10 % on (a+b+c)				1913.51	
			f) Cess @ 1% on (a+b+c+d+e)				210.49	
			Rate per metre = (a+b+c+d+e+f)				21259.06	
						say	***21259.00***	
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	7.000	164.60	1152.20	M-104
			Electric Detonators	each	30.000	11.04	331.20	M-094/100
			b) Labour					
			Mate	day	1.600	354.00	566.40	L-12
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			Mazdoor	day	18.000	310.00	5580.00	L-13
			Mazdoor (Skilled)	day	4.000	442.00	1768.00	L-15
			Diver	day	0.500	796.00	398.00	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.000	634.51	1269.02	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				811.73	
			Consumables in sinking @ 10 per cent of cost of (b).				793.74	
			d) GST @ 12 % on (a+b+c)				2318.81	
			e) Overhead charges @ 20 % on (a+b+c+d)				4328.45	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2597.07	
			g) Cess @ 1% on (a+b+c+d+e+f)				285.68	
			Rate per metre = (a+b+c+d+e+f+g)				28853.46	
						say	***28853.00***	
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	0.180	354.00	63.72	L-12
			Sinker (skilled)	day	1.500	442.00	663.00	L-15
			Sinking helper (semi-skilled)	day	3.000	354.00	1062.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.000	976.11	3904.44	P&M-075
			Consumables in sinking @10 per cent of (b)				390.44	
			c) GST @ 12 % on (a+b)				730.03	
			c) Overhead charges @ 20 % on (a+b)				1362.73	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Contractor's profit @ 10 % on (a+b+c)				817.64	
			f) Cess @ 1% on (a+b+c+d+e)				89.94	
			Rate per metre = (a+b+c+d+e+f)				9083.94	
						say	***9084.00***	
12.14 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.20 m/hour					
			a) Labour					
			Mate	day	0.250	354.00	88.50	L-12
			Sinker	day	1.750	442.00	773.50	L-15
			Sinking helper (semi-skilled)	day	3.500	354.00	1239.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.000	976.11	4880.55	P&M-075
			Consumables in sinking @10 per cent of (b)				488.06	
			c) GST @ 12 % on (a+b)				896.35	
			c) Overhead charges @ 20 % on (a+b)				1673.19	
			d) Contractor's profit @ 10 % on (a+b+c)				1003.92	
			f) Cess @ 1% on (a+b+c+d+e)				110.43	
			Rate per metre = (a+b+c+d+e+f)				11153.50	
						say	***11154.00***	

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%	11711.000
12th m	5%	12297.000
13th m	5%	12912.000
14th m	5%	13558.000
15th m	5%	14236.000
16th m	5%	14948.000
17th m	5%	15695.000
18th m	5%	16480.000
19th m	5%	17304.000
20th m	5%	18169.000
Total Cost from 10m upto 20m		147310.000
Avg Rate per metre		***14731.000***

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.

			Including 20% for Kentledge
21st m	7.5%	19532.000	23438.00
22nd m	7.5%	20997.000	25196.00
23rd m	7.5%	22572.000	27086.00
24th m	7.5%	24265.000	29118.00
25th m	7.5%	26085.000	31302.00
26th m	7.5%	28041.000	33649.00
27th m	7.5%	30144.000	36173.00
28th m	7.5%	32405.000	38886.00
29th m	7.5%	34835.000	41802.00
30th m	7.5%	37448.000	44938.00
Total Cost from 20m upto 30m		276324.000	331588.00
Avg Rate per metre		***27632.000***	***33159.00***

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

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour			Including 20% for Kentledge		
			31st m	10%	41193.000	49432.00		
			32nd	10%	45312.000	54374.00		
			33rd m	10%	49843.000	59812.00		
			34th m	10%	54827.000	65792.00		
			35th m	10%	60310.000	72372.00		
			36th m	10%	66341.000	79609.00		
			37th m	10%	72975.000	87570.00		
			38th m	10%	80273.000	96328.00		
			39th m	10%	88300.000	105960.00		
			40th m	10%	97130.000	116556.00		
			Total Cost from 30m upto 40m		656504.000	787805.00		
			Avg Rate per metre		***65650.000***	***78781.00***		
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	0.220	354.00	77.88	L-12
			Sinker (skilled)	day	2.000	442.00	884.00	L-15
			Sinking helper (semi-skilled)	hour	3.500	354.00	1239.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.		5.500	976.11	5368.61	P&M-075
			Consumables in sinking @ 10 per cent of (b)				536.86	
			c) GST @ 12 % on (a+b)				972.76	
			c) Overhead charges @ 20 % on (a+b)				1815.82	
			d) Contractor's profit @ 10 % on (a+b+c)				1089.49	
			f) Cess @ 1% on (a+b+c+d+e)				119.84	
			Rate per metre = (a+b+c+d+e+f)				12104.26	
						say	***12104.00***	
12.14 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.17 m/hour					
			a) Labour					
			Mate	day	0.320	354.00	113.28	L-12
			Sinker	day	2.500	442.00	1105.00	L-15
			Sinking helper (semi-skilled)	day	4.500	354.00	1593.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.500	634.51	2220.79	P&M-063
			Consumables in sinking @ 10 per cent of (b)				807.75	
			c) GST @ 12 % on (a+b)				1403.58	
			c) Overhead charges @ 20 % on (a+b)				2620.01	
			d) Contractor's profit @ 10 % on (a+b+c)				1572.01	
			f) Cess @ 1% on (a+b+c+d+e)				172.92	
			Rate per metre = (a+b+c+d+e+f)				17465.00	
						say	***17465.00***	

Sr No	Ref. to MoRTH/ DSR 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.			Including for dewatering @ 5% of cost, if required		
			11th m	5%	18338.000	19255.00		
			12th m	5%	19255.000	20218.00		
			13th m	5%	20218.000	21229.00		
			14th m	5%	21229.000	22290.00		
			15th m	5%	22290.000	23405.00		
			16th m	5%	23405.000	24575.00		
			17th m	5%	24575.000	25804.00		
			18th m	5%	25804.000	27094.00		
			19th m	5%	27094.000	28449.00		
			20th m	5%	28449.000	29871.00		
			Total Cost from 10m upto 20m		230657.000	242190.00		
			Avg Rate per metre		***23066.000***	***24219.00***		
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).			Including 25% for Kentledge	Including 5% for dewatering, if required	
			31st m	7.5%	30583.000	38229.00	40140.00	
			32nd	7.5%	32877.000	41096.00	43151.00	
			33rd m	7.5%	35343.000	44179.00	46388.00	
			34th m	7.5%	37994.000	47493.00	49868.00	
			35th m	7.5%	40844.000	51055.00	53608.00	
			36th m	7.5%	43907.000	54884.00	57628.00	
			37th m	7.5%	47200.000	59000.00	61950.00	
			38th m	7.5%	50740.000	63425.00	66596.00	
			39th m	7.5%	54546.000	68183.00	71592.00	
			40th m	7.5%	58637.000	73296.00	76961.00	
			Total Cost from 30m upto 40m		432671.000	540840.00	567882.00	
			Avg Rate per metre		***43267.000***	***54084.00***	***56788.00***	
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).			Including 20% for Kentledge	Including 5% for dewatering, if required	
			31st m	10%	64501.000	77401.00	81271.00	
			32nd	10%	70951.000	85141.00	89398.00	
			33rd m	10%	78046.000	93655.00	98338.00	
			34th m	10%	85851.000	103021.00	108172.00	
			35th m	10%	94436.000	113323.00	118989.00	
			36th m	10%	103880.000	124656.00	130889.00	
			37th m	10%	114268.000	137122.00	143978.00	
			38th m	10%	125695.000	150834.00	158376.00	
			39th m	10%	138265.000	165918.00	174214.00	
			40th m	10%	152092.000	182510.00	191636.00	
			Total Cost from 30m upto 40m		1027985.000	1233581.00	1295261.00	
			Avg Rate per metre		***102799.000***	***123358.00***	***129526.00***	

Sr No	Ref. to MoRTH/ DSR 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	0.680	354.00	240.72	L-12
			Sinker (skilled)	day	4.000	442.00	1768.00	L-15
			Sinking helper (semi-skilled)	day	12.000	354.00	4248.00	L-14
			Diver	day	1.000	796.00	796.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.000	976.11	4880.55	P&M-075
			Air compressor with pneumatic breakers	hour	3.750	634.51	2379.41	P&M-063
			Consumables in sinking @ 10 per cent of (b)				726.00	
			Add for dewatering @ of 5 per cent of (a+b), if required				751.93	
			c) GST @ 12 % on (a+b)				1894.87	
			d) Overhead charges @ 20 % on (a+b+c)				3537.10	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2122.26	
			f) Cess @ 1% on (a+b+c+d+e)				233.45	
			Rate per metre = (a+b+c+d+e+f)				23578.29	
						say	***23578.00***	
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	8.000	164.60	1316.80	M-104
			Electric Detonators	each	32.000	11.04	353.28	M-094/100
			b) Labour					
			Mate	day	1.090	354.00	385.86	L-12
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			Mazdoor	day	20.000	310.00	6200.00	L-13
			Mazdoor (Skilled)	day	4.000	442.00	1768.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.000	634.51	1269.02	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				813.80	
			Consumables in sinking @ 10 per cent of cost of (b).				915.04	
			d) GST @ 12 % on (a+b+c)				2361.00	
			e) Overhead charges @ 20 % on (a+b+c+d)				4407.19	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2644.32	
			g) Cess @ 1% on (a+b+c+d+e+f)				290.87	
			Rate per metre = (a+b+c+d+e+f+g)				29378.34	
						say	***29378.00***	

Sr No	Ref. to MoRTH/ DSR 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	0.190	354.00	67.26	L-12
			Sinker (skilled)	day	1.500	442.00	663.00	L-15
			Sinking helper (semi-skilled)	day	3.250	354.00	1150.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.000	976.11	3904.44	P&M-075
			Consumables in sinking @10 per cent of (b)				390.44	
			c) GST @ 12 % on (a+b)				741.08	
			d) Overhead charges @ 20 % on (a+b+c)				1383.34	
			e) Contractor's profit @ 10 % on (a+b+c+d)				830.01	
			f) Cess @ 1% on (a+b+c+d+e)				91.30	
			Rate per metre = (a+b+c+d+e+f)				9221.37	
						say	***9221.00***	
12.15 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.18 m/hour					
			a) Labour					
			Mate	day	0.270	354.00	95.58	L-12
			Sinker	day	1.750	442.00	773.50	L-15
			Sinking helper (semi-skilled)	day	4.000	354.00	1416.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.500	976.11	5368.61	P&M-075
			Consumables in sinking @10 per cent of (b)				536.86	
			c) GST @ 12 % on (a+b)				982.87	
			d) Overhead charges @ 20 % on (a+b+c)				1834.68	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1100.81	
			f) Cess @ 1% on (a+b+c+d+e)				121.09	
			Rate per metre = (a+b+c+d+e+f)				12230.00	
						say	***12230.00***	
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%	12842.000			
			12th m	5%	13484.000			
			13th m	5%	14158.000			
			14th m	5%	14866.000			
			15th m	5%	15609.000			
			16th m	5%	16389.000			
			17th m	5%	17208.000			
			18th m	5%	18068.000			
			19th m	5%	18971.000			
			20th m	5%	19920.000			
			Total Cost from 10m upto 20m		161515.000			
			Avg Rate per metre		***16152.000***			
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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.			Including 20% for Kentledge		
			21st m	7.5%	21414.000	25697.00		
			22nd m	7.5%	23020.000	27624.00		
			23rd m	7.5%	24747.000	29696.00		
			24th m	7.5%	26603.000	31924.00		
			25th m	7.5%	28598.000	34318.00		
			26th m	7.5%	30743.000	36892.00		
			27th m	7.5%	33049.000	39659.00		
			28th m	7.5%	35528.000	42634.00		
			29th m	7.5%	38193.000	45832.00		
			30th m	7.5%	41057.000	49268.00		
			Total Cost from 20m upto 30m		302952.000	363544.00		
			Avg Rate per metre		***30295.000***	***36354.00***		
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			Including 20% for Kentledge		
			31st m	10%	45162.700	54195.00		
			32nd	10%	49679.000	59615.00		
			33rd m	10%	54647.000	65576.00		
			34th m	10%	60112.000	72134.00		
			35th m	10%	66123.000	79348.00		
			36th m	10%	72735.000	87282.00		
			37th m	10%	80009.000	96011.00		
			38th m	10%	88010.000	105612.00		
			39th m	10%	96811.000	116173.00		
			40th m	10%	106492.000	127790.00		
			Total Cost from 30m upto 40m		719780.700	863736.00		
			Avg Rate per metre		***71978.000***	***86374.00***		
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	0.240	354.00	84.96	L-12
			Sinker (skilled)	day	2.250	442.00	994.50	L-15
			Sinking helper (semi-skilled)	day	3.750	354.00	1327.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.750	976.11	5612.63	P&M-075
			Consumables in sinking @ 10 per cent of (b)				561.26	
			c) GST @ 12 % on (a+b)				1029.70	
			d) Overhead charges @ 20 % on (a+b+c)				1922.11	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1153.27	
			f) Cess @ 1% on (a+b+c+d+e)				126.86	
			Rate per metre = (a+b+c+d+e+f)				12812.79	
						say	***12813.00***	
12.15 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.15 m / hour					
			a) Labour					
			Mate	day	0.340	354.00	120.36	L-12
			Sinker	day	2.500	442.00	1105.00	L-15
			Sinking helper (semi-skilled)	day	5.000	354.00	1770.00	L-14

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.500	976.11	6344.72	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.750	634.51	2379.41	P&M-063
			Consumables in sinking @ 10 per cent of (b)				872.41	
			c) GST @ 12 % on (a+b)				1511.03	
			d) Overhead charges @ 20 % on (a+b+c)				2820.59	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1692.35	
			f) Cess @ 1% on (a+b+c+d+e)				186.16	
			Rate per metre = (a+b+c+d+e+f)				18802.03	
						say	***18802.00***	
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.			Including for dewatering @ 5% of cost, if required		
			11th m	5%	19742.000	20729.00		
			12th m	5%	20729.000	21765.00		
			13th m	5%	21765.000	22853.00		
			14th m	5%	22853.000	23996.00		
			15th m	5%	23996.000	25196.00		
			16th m	5%	25196.000	26456.00		
			17th m	5%	26456.000	27779.00		
			18th m	5%	27779.000	29168.00		
			19th m	5%	29168.000	30626.00		
			20th m	5%	30626.000	32157.00		
			Total Cost from 10m upto 20m		248310.000	260725.00		
			Avg Rate per metre		***24831.000***	***26073.00***		
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).			Including 25% for Kentledge	Including 5% for dewatering, if required	
			31st m	7.5%	32923.000	41154.00	43212.00	
			32nd	7.5%	35392.000	44240.00	46452.00	
			33rd m	7.5%	38046.000	47558.00	49936.00	
			34th m	7.5%	40899.000	51124.00	53680.00	
			35th m	7.5%	43966.000	54958.00	57706.00	
			36th m	7.5%	47263.000	59079.00	62033.00	
			37th m	7.5%	50808.000	63510.00	66686.00	
			38th m	7.5%	54619.000	68274.00	71688.00	
			39th m	7.5%	58715.000	73394.00	77064.00	
			40th m	7.5%	63119.000	78899.00	82844.00	
			Total Cost from 30m upto 40m		465750.000	582190.00	611301.00	
			Avg Rate per metre		***46575.000***	***58219.00***	***61130.00***	
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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).			Including 20% for Kentledge	Including 5% for dewatering, if required	
			31st m	10%	69431.000	83317.00	87483.00	
			32nd	10%	76374.000	91649.00	96231.00	
			33rd m	10%	84011.000	100813.00	105854.00	
			34th m	10%	92412.000	110894.00	116439.00	
			35th m	10%	101653.000	121984.00	128083.00	
			36th m	10%	111818.000	134182.00	140891.00	
			37th m	10%	123000.000	147600.00	154980.00	
			38th m	10%	135300.000	162360.00	170478.00	
			39th m	10%	148830.000	178596.00	187526.00	
			40th m	10%	163713.000	196456.00	206279.00	
			Total Cost from 30m upto 40m		1106542.000	1327851.00	1394244.00	
			Avg Rate per metre		***110654.000***	***132785.00***	***139424.00***	
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	0.760	354.00	269.04	L-12
			Sinker (skilled)	day	4.000	442.00	1768.00	L-15
			Sinking helper (semi-skilled)	day	14.000	354.00	4956.00	L-14
			Diver	day	1.200	796.00	955.20	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.500	976.11	6344.72	P&M-075
			Air compressor with pneumatic breakers	hour	4.000	634.51	2538.04	P&M-063
			Consumables in sinking @ 10 per cent of (b)				888.28	
			Add for dewatering @ of 5 per cent of (a+b), if required				885.96	
			c) GST @ 12 % on (a+b)				2232.63	
			d) Overhead charges @ 20 % on (a+b+c)				4167.57	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2500.54	
			f) Cess @ 1% on (a+b+c+d+e)				275.06	
			Rate per metre = (a+b+c+d+e+f)				27781.04	
						say	***27781.00***	
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	10.000	164.60	1646.00	M-104
			Electric Detonators	each	40.000	11.04	441.60	M-094/100
			b) Labour					
			Mate	day	1.170	354.00	414.18	L-12
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			Mazdoor	day	22.000	310.00	6820.00	L-13
			Mazdoor (Skilled)	day	4.000	442.00	1768.00	L-15
			Diver	day	1.000	796.00	796.00	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.000	976.11	6832.77	P&M-075

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.500	634.51	1586.28	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				950.69	
			Consumables in sinking @ 10 per cent of cost of (b).				1059.47	
			d) GST @ 12 % on (a+b+c)				2773.38	
			e) Overhead charges @ 20 % on (a+b+c+d)				5176.97	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3106.18	
			g) Cess @ 1% on (a+b+c+d+e+f)				341.68	
			Rate per metre = (a+b+c+d+e+f+g)				34509.70	
						say	***34510.00***	
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	0.200	354.00	70.80	L-12
			Sinker (skilled)	day	1.500	442.00	663.00	L-15
			Sinking helper (semi-skilled)	day	3.500	354.00	1239.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.000	976.11	4880.55	P&M-075
			Consumables in sinking @10 per cent of (b)				488.06	
			c) GST @ 12 % on (a+b)				880.97	
			d) Overhead charges @ 20 % on (a+b+c)				1644.48	
			e) Contractor's profit @ 10 % on (a+b+c+d)				986.69	
			f) Cess @ 1% on (a+b+c+d+e)				108.54	
			Rate per metre = (a+b+c+d+e+f)				10962.09	
						say	***10962.00***	
12.16 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.17 m / hour					
			a) Labour					
			Mate	day	0.310	354.00	109.74	L-12
			Sinker	day	2.000	442.00	884.00	L-15
			Sinking helper (semi-skilled)	day	4.250	354.00	1504.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.750	976.11	5612.63	P&M-075
			Consumables in sinking @10 per cent of (b)				561.26	
			c) GST @ 12 % on (a+b)				1040.66	
			d) Overhead charges @ 20 % on (a+b+c)				1942.56	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1165.54	
			f) Cess @ 1% on (a+b+c+d+e)				128.21	
			Rate per metre = (a+b+c+d+e+f)				12949.10	
						say	***12949.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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%	13597.000			
			12th m	5%	14277.000			
			13th m	5%	14991.000			
			14th m	5%	15741.000			
			15th m	5%	16528.000			
			16th m	5%	17354.000			
			17th m	5%	18222.000			
			18th m	5%	19133.000			
			19th m	5%	20090.000			
			20th m	5%	21095.000			
			Total Cost from 10m upto 20m		171028.000			
			Avg Rate per metre		***17103.000***			
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.			Including 20% for Kentledge		
			21st m	7.5%	22677.000	27212.00		
			22nd m	7.5%	24378.000	29254.00		
			23rd m	7.5%	26206.000	31447.00		
			24th m	7.5%	28171.000	33805.00		
			25th m	7.5%	30284.000	36341.00		
			26th m	7.5%	32555.000	39066.00		
			27th m	7.5%	34997.000	41996.00		
			28th m	7.5%	37622.000	45146.00		
			29th m	7.5%	40444.000	48533.00		
			30th m	7.5%	43477.000	52172.00		
			Total Cost from 20m upto 30m		320811.000	384972.00		
			Avg Rate per metre		***32081.000***	***38497.00***		
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.			Including 20% for Kentledge		
			31st m	10%	47825.000	57390.00		
			32nd	10%	52608.000	63130.00		
			33rd m	10%	57869.000	69443.00		
			34th m	10%	63656.000	76387.00		
			35th m	10%	70022.000	84026.00		
			36th m	10%	77024.000	92429.00		
			37th m	10%	84726.000	101671.00		
			38th m	10%	93199.000	111839.00		
			39th m	10%	102519.000	123023.00		
			40th m	10%	112771.000	135325.00		
			Total Cost from 30m upto 40m		762219.000	914663.00		
			Avg Rate per metre		***76222.000***	***91466.00***		
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	0.250	354.00	88.50	L-12
			Sinker (skilled)	day	2.500	442.00	1105.00	L-15
			Sinking helper (semi-skilled)	day	5.500	354.00	1947.00	L-14

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Consumables in sinking @ 10 per cent of (b)				585.67	
			c) GST @ 12 % on (a+b)				1149.94	
			d) Overhead charges @ 20 % on (a+b+c)				2146.55	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1287.93	
			f) Cess @ 1% on (a+b+c+d+e)				141.67	
			Rate per metre = (a+b+c+d+e+f)				14308.92	
						say	***14309.00***	
12.16 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.15m/hour.					
			a) Labour					
			Mate	day	0.400	354.00	141.60	L-12
			Sinker	day	3.000	442.00	1326.00	L-15
			Sinking helper (semi-skilled)	day	5.500	354.00	1947.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.000	634.51	2538.04	P&M-063
			Consumables in sinking @ 10 per cent of (b)				839.47	
			c) GST @ 12 % on (a+b)				1517.85	
			d) Overhead charges @ 20 % on (a+b+c)				2833.32	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1699.99	
			f) Cess @ 1% on (a+b+c+d+e)				187.00	
			Rate per metre = (a+b+c+d+e+f)				18886.93	
						say	***18887.00***	
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.				Including for dewatering @ 5% of cost, if required	
			11th m	5%	19831.000		20823.00	
			12th m	5%	20823.000		21864.00	
			13th m	5%	21864.000		22957.00	
			14th m	5%	22957.000		24105.00	
			15th m	5%	24105.000		25310.00	
			16th m	5%	25310.000		26576.00	
			17th m	5%	26576.000		27905.00	
			18th m	5%	27905.000		29300.00	
			19th m	5%	29300.000		30765.00	
			20th m	5%	30765.000		32303.00	
			Total Cost from 10m upto 20m		249436.000		261908.00	
			Avg Rate per metre		***24944.000***		***26191.00***	
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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).			Including 25% for Kentledge	Including 5% for dewatering, if required	
			31st m	7.5%	33072.000	41340.00	43407.00	
			32nd	7.5%	35552.000	44440.00	46662.00	
			33rd m	7.5%	38218.000	47773.00	50162.00	
			34th m	7.5%	41084.000	51355.00	53923.00	
			35th m	7.5%	44165.000	55206.00	57966.00	
			36th m	7.5%	47477.000	59346.00	62313.00	
			37th m	7.5%	51038.000	63798.00	66988.00	
			38th m	7.5%	54866.000	68583.00	72012.00	
			39th m	7.5%	58981.000	73726.00	77412.00	
			40th m	7.5%	63405.000	79256.00	83219.00	
			Total Cost from 30m upto 40m		467858.000	584823.00	614064.00	
			Avg Rate per metre		***46786.000***	***58482.00***	***61406.00***	
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).			Including 20% for Kentledge	Including 5% for dewatering, if required	
			31st m	10%	69746.000	83695.00	87880.00	
			32nd	10%	76721.000	92065.00	96668.00	
			33rd m	10%	84393.000	101272.00	106335.60	
			34th m	10%	92832.000	111398.00	116967.90	
			35th m	10%	102115.000	122538.00	128664.90	
			36th m	10%	112327.000	134792.00	141531.60	
			37th m	10%	123560.000	148272.00	155685.60	
			38th m	10%	135916.000	163099.00	171253.95	
			39th m	10%	149508.000	179410.00	188380.50	
			40th m	10%	164459.000	197351.00	207218.55	
			Total Cost from 30m upto 40m		1111577.000	1333892.00	1400586.60	
			Avg Rate per metre		***111158.000***	***133389.00***	***140059.00***	
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	0.860	354.00	304.44	L-12
			Sinker (skilled)	day	4.000	442.00	1768.00	L-15
			Sinking helper (semi-skilled)	day	16.000	354.00	5664.00	L-14
			Diver	day	1.400	796.00	1114.40	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.000	976.11	6832.77	P&M-075
			Air compressor with pneumatic breakers	hour	4.250	634.51	2696.67	P&M-063
			Consumables in sinking @ 10 per cent of (b)				952.94	
			Add for dewatering @ 5 per cent of cost, if required				524.12	
			c) GST @ 12 % on (a+b)				2382.88	
			d) Overhead charges @ 20 % on (a+b+c)				4448.04	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2668.83	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Cess @ 1% on (a+b+c+d+e)				293.57	
			Rate per metre = (a+b+c+d+e+f)				29650.66	
						say	***29651.00***	
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	11.000	164.60	1810.60	M-104
			Electric Detonators	each.	44.000	11.04	485.76	M-094/100
			b) Labour					
			Mate	day	1.270	354.00	449.58	L-12
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			Mazdoor	day	24.000	310.00	7440.00	L-13
			Mazdoor (Skilled)	day	4.000	442.00	1768.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.500	976.11	8296.94	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.000	634.51	1903.53	P&M-063
			Dewatering @ 5 per cent of cost (c), if required.				510.02	
			Consumables in sinking @ 10 per cent of cost of (b+c).				2116.46	
			d) GST @ 12 % on (a+b+c)				3069.29	
			e) Overhead charges @ 20 % on (a+b+c+d)				5729.34	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3437.60	
			g) Cess @ 1% on (a+b+c+d+e+f)				378.14	
			Rate per metre = (a+b+c+d+e+f+g)				38191.76	
						say	***38192.00***	
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	0.210	354.00	74.34	L-12
			Sinker (skilled)	day	1.500	442.00	663.00	L-15
			Sinking helper (semi-skilled)	day	3.300	354.00	1168.20	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Consumables in sinking @10 per cent of (b)				585.67	
			c) GST @ 12 % on (a+b)				1001.74	
			d) Overhead charges @ 20 % on (a+b+c)				1869.92	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1121.95	
			f) Cess @ 1% on (a+b+c+d+e)				123.41	
			Cost for 0.5m = a+b+c+d+e+f				12464.89	
			Rate per metre = (a+b+c+d+e+f)/0.50				24929.78	
						say	***24930.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.17 A		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.13 m/hour					
			a) Labour					
			Mate	day	0.320	354.00	113.28	L-12
			Sinker	day	2.000	442.00	884.00	L-15
			Sinking helper (semi-skilled)	day	4.500	354.00	1593.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.000	976.11	3904.44	P&M-075
			Consumables in sinking @10 per cent of (b)				390.44	
			c) GST @ 12 % on (a+b)				826.22	
			d) Overhead charges @ 20 % on (a+b+c)				1542.28	
			e) Contractor's profit @ 10 % on (a+b+c+d)				925.37	
			f) Cess @ 1% on (a+b+c+d+e)				101.79	
			Cost for 0.5m = a+b+c+d+e+f				10280.82	
			Rate per metre = (a+b+c+d+e+f)/0.50				20561.64	
						say	***20562.00***	
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%	21590.000			
			12th m	5%	22670.000			
			13th m	5%	23804.000			
			14th m	5%	24994.000			
			15th m	5%	26244.000			
			16th m	5%	27556.000			
			17th m	5%	28934.000			
			18th m	5%	30381.000			
			19th m	5%	31900.000			
			20th m	5%	33495.000			
			Total Cost from 10m upto 20m		271568.000			
			Avg Rate per metre		***27157.000***			
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.			Including 20% for Kentledge		
			21st m	7.5%	36007.000	43208.00		
			22nd m	7.5%	38708.000	46450.00		
			23rd m	7.5%	41611.000	49933.00		
			24th m	7.5%	44732.000	53678.00		
			25th m	7.5%	48087.000	57704.00		
			26th m	7.5%	51694.000	62033.00		
			27th m	7.5%	55571.000	66685.00		
			28th m	7.5%	59739.000	71687.00		
			29th m	7.5%	64219.000	77063.00		
			30th m	7.5%	69035.000	82842.00		
			Total Cost from 20m upto 30m		509403.000	611283.00		
			Avg Rate per metre		***50940.000***	***61128.00***		
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.			Including 20% for Kentledge		
			31st m	10%	75939.000	91127.00		
			32nd	10%	83533.000	100240.00		

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			33rd m	10%	91886.000	110263.00		
			34th m	10%	101075.000	121290.00		
			35th m	10%	111183.000	133420.00		
			36th m	10%	122301.000	146761.00		
			37th m	10%	134531.000	161437.00		
			38th m	10%	147984.000	177581.00		
			39th m	10%	162782.000	195338.00		
			40th m	10%	179060.000	214872.00		
			Total Cost from 30m upto 40m		1210274.000	1452329.00		
			Avg Rate per metre		***121027.000***	***145233.00***		
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	0.260	354.00	92.04	L-12
			Sinker (skilled)	day	2.500	442.00	1105.00	L-15
			Sinking helper (semi-skilled)	day	4.000	354.00	1416.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.000	976.11	4880.55	P&M-075
			Consumables in sinking @ 10 per cent of (b)				488.06	
			c) GST @ 12 % on (a+b)				957.80	
			d) Overhead charges @ 20 % on (a+b+c)				1787.89	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1072.73	
			f) Cess @ 1% on (a+b+c+d+e)				118.00	
			Cost for 0.5m = a+b+c+d+e+f				11918.07	
			Rate per metre = (a+b+c+d+e+f)/0.50				23836.14	
						say	***23836.00***	
12.17 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.08 m/hour					
			a) Labour					
			Mate	day	0.430	354.00	152.22	L-12
			Sinker	day	3.500	442.00	1547.00	L-15
			Sinking helper (semi-skilled)	day	5.750	354.00	2035.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.250	634.51	2696.67	P&M-063
			Consumables in sinking @ 10 per cent of (b)				855.33	
			c) GST @ 12 % on (a+b)				1577.21	
			d) Overhead charges @ 20 % on (a+b+c)				2944.12	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1766.47	
			f) Cess @ 1% on (a+b+c+d+e)				194.31	
			Cost for 0.5m = a+b+c+d+e+f				19625.49	
			Rate per metre = (a+b+c+d+e+f)/0.50				39250.98	
						say	***39251.00***	
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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b	Add for dewatering @ 5 per cent of cost, if required.			Including for dewatering @ 5% of cost, if required		
			11th m	5%	41214.000	43275.00		
			12th m	5%	43275.000	45439.00		
			13th m	5%	45439.000	47711.00		
			14th m	5%	47711.000	50097.00		
			15th m	5%	50097.000	52602.00		
			16th m	5%	52602.000	55232.00		
			17th m	5%	55232.000	57994.00		
			18th m	5%	57994.000	60894.00		
			19th m	5%	60894.000	63939.00		
			20th m	5%	63939.000	67136.00		
			Total Cost from 10m upto 20m		518397.000	544317.00		
			Avg Rate per metre		***51840.000***	***54432.00***		
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			Including 25% for Kentledge	Including 5% for dewatering, if required	
			31st m	7.5%	68734.000	85918.00	90214.00	
			32nd	7.5%	73889.000	92361.00	96979.00	
			33rd m	7.5%	79431.000	99289.00	104253.00	
			34th m	7.5%	85388.000	106735.00	112072.00	
			35th m	7.5%	91792.000	114740.00	120477.00	
			36th m	7.5%	98676.000	123345.00	129512.00	
			37th m	7.5%	106077.000	132596.00	139226.00	
			38th m	7.5%	114033.000	142541.00	149668.00	
			39th m	7.5%	122585.000	153231.00	160893.00	
			40th m	7.5%	131779.000	164724.00	172960.00	
			Total Cost from 30m upto 40m		972384.000	1215480.00	1276254.00	
			Avg Rate per metre		***97238.000***	***121548.00***	***127625.00***	
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).			Including 20% for Kentledge	Including 5% for dewatering, if required	
			31st m	10%	144957.000	173948.00	182645.00	
			32nd	10%	159453.000	191344.00	200911.00	
			33rd m	10%	175398.000	210478.00	221002.00	
			34th m	10%	192938.000	231526.00	243102.00	
			35th m	10%	212232.000	254678.00	267412.00	
			36th m	10%	233455.000	280146.00	294153.00	
			37th m	10%	256801.000	308161.00	323569.00	
			38th m	10%	282481.000	338977.00	355926.00	
			39th m	10%	310729.000	372875.00	391519.00	
			40th m	10%	341802.000	410162.00	430670.00	
			Total Cost from 30m upto 40m		2310246.000	2772295	2910909	
			Avg Rate per metre		***231025.000***	***277230.00***	***291091.00***	
12.17		**C**	**Soft Rock (11m dia well)**					
			Unit = Running Meter.					
			Taking output = 0.50 m					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.06 m/hour					
			a) Labour					
			Mate	day	0.950	354.00	336.30	L-12
			Sinker (skilled)	day	4.250	442.00	1878.50	L-15
			Sinking helper (semi-skilled)	day	18.000	354.00	6372.00	L-14
			Diver	day	1.500	796.00	1194.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.000	976.11	7808.88	P&M-075
			Air compressor with pneumatic breakers	hour	4.500	634.51	2855.30	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1066.42	
			Add for dewatering @ 5 per cent of cost, if required				586.53	
			c) GST @ 12 % on (a+b)				2651.75	
			d) Overhead charges @ 20 % on (a+b+c)				4949.94	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2969.96	
			f) Cess @ 1% on (a+b+c+d+e)				326.70	
			Cost for 0.5m = a+b+c+d+e+f				32996.28	
			Rate per metre = (a+b+c+d+e+f)/0.50				65992.56	
						say	***65993.00***	
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	12.000	164.60	1975.20	M-104
			Electric Detonators	each.	48.000	11.04	529.92	M-094/100
			b) Labour					
			Mate	day	1.350	354.00	477.90	L-12
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			Mazdoor	day	26.000	310.00	8060.00	L-13
			Mazdoor (Skilled)	day	4.000	442.00	1768.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.000	976.11	9761.10	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.500	634.51	2220.79	P&M-063
			Dewatering @ 5 per cent of cost (c), if required.				599.09	
			Consumables in sinking @ 10 per cent of cost of (b+c).				2308.43	
			d) GST @ 12 % on (a+b+c)				3419.63	
			e) Overhead charges @ 20 % on (a+b+c+d)				6383.31	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3829.99	
			g) Cess @ 1% on (a+b+c+d+e+f)				421.30	
			Cost for 0.5m = a+b+c+d+e+f+g				42551.16	
			Rate per metre = (a+b+c+d)/0.50				85102.32	
						say	***85102.00***	
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.**					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			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	0.220	354.00	77.88	L-12
			Sinker (skilled)	day	1.750	442.00	773.50	L-15
			Sinking helper (semi-skilled)	day	4.000	354.00	1416.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	976.11	5856.66	P&M-075
			Consumables in sinking @10 per cent of (b)				585.67	
			c) GST @ 12 % on (a+b)				1045.17	
			d) Overhead charges @ 20 % on (a+b+c)				1950.98	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1170.59	
			f) Cess @ 1% on (a+b+c+d+e)				128.76	
			Cost for 0.25m = a+b+c+d+e+f				13005.21	
			Rate per metre = (a+b+c+d+e+f)/0.25				52020.84	
						say	***52021.00***	
12.18 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.038 m/hour					
			a) Labour					
			Mate	day	0.370	354.00	130.98	L-12
			Sinker	day	2.500	442.00	1105.00	L-15
			Sinking helper (semi-skilled)	day	4.750	354.00	1681.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.500	976.11	6344.72	P&M-075
			Consumables in sinking @10 per cent of (b)				634.47	
			c) GST @ 12 % on (a+b)				1187.60	
			d) Overhead charges @ 20 % on (a+b+c)				2216.85	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1330.11	
			f) Cess @ 1% on (a+b+c+d+e)				146.31	
			Cost for 0.25m = a+b+c+d+e+f				14777.54	
			Rate per metre = (a+b+c+d+e+f)/0.25				59110.16	
						say	***59110.00***	
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%	62066.000			
			12th m	5%	65169.000			
			13th m	5%	68427.450			
			14th m	5%	71848.823			
			15th m	5%	75441.264			
			16th m	5%	79213.327			
			17th m	5%	83173.993			
			18th m	5%	87332.693			
			19th m	5%	91699.328			
			20th m	5%	96284.294			
			Total Cost from 10m upto 20m		780656.172			
			Avg Rate per metre		***78066.000***			

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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.			Including 20% for Kentledge		
			21st m	7.5%	103506.000	124207.00		
			22nd m	7.5%	111269.000	133523.00		
			23rd m	7.5%	119614.000	143537.00		
			24th m	7.5%	128585.000	154302.00		
			25th m	7.5%	138229.000	165875.00		
			26th m	7.5%	148596.000	178315.00		
			27th m	7.5%	159741.000	191689.00		
			28th m	7.5%	171722.000	206066.00		
			29th m	7.5%	184601.000	221521.00		
			30th m	7.5%	198446.000	238135.00		
			Total Cost from 20m upto 30m		1464309.000	1757170.00		
			Avg Rate per metre		***146431.000***	***175717.00***		
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.			Including 20% for Kentledge		
			31st m	10%	218291.000	261949.00		
			32nd	10%	240120.000	288144.00		
			33rd m	10%	264132.000	316958.00		
			34th m	10%	290545.000	348654.00		
			35th m	10%	319600.000	383520.00		
			36th m	10%	351560.000	421872.00		
			37th m	10%	386716.000	464059.00		
			38th m	10%	425388.000	510466.00		
			39th m	10%	467927.000	561512.00		
			40th m	10%	514720.000	617664.00		
			Total Cost from 30m upto 40m		3478999.000	4174798		
			Avg Rate per metre		***347900.000***	***417480.00***		
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	0.300	354.00	106.20	L-12
			Sinker (skilled)	day	3.000	442.00	1326.00	L-15
			Sinking helper (semi-skilled)	day	4.500	354.00	1593.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.250	976.11	6100.69	P&M-075
			Consumables in sinking @ 10 per cent of (b)				610.07	
			c) GST @ 12 % on (a+b)				1168.32	
			d) Overhead charges @ 20 % on (a+b+c)				2180.86	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1308.51	
			f) Cess @ 1% on (a+b+c+d+e)				143.94	
			Cost for 0.25m = a+b+c+d+e+f				14537.59	
			Rate per metre = (a+b+c+d+e+f)/0.25				58150.36	
						say	***58150.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.18 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.03 m/hour					
			a) Labour					
			Mate	day	0.480	354.00	169.92	L-12
			Sinker	day	3.750	442.00	1657.50	L-15
			Sinking helper (semi-skilled)	day	6.000	354.00	2124.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.330	976.11	8131.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.500	634.51	2855.30	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1098.63	
			c) GST @ 12 % on (a+b)				1924.36	
			d) Overhead charges @ 20 % on (a+b+c)				3592.14	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2155.29	
			f) Cess @ 1% on (a+b+c+d+e)				237.08	
			Cost for 0.25m = a+b+c+d+e+f				23945.22	
			Rate per metre = (a+b+c+d+e+f)/0.25				95780.88	
						say	***95781.00***	
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.				Including for dewatering @ 5% of cost, if required	
			11th m	5%	100570.000	105599.00		
			12th m	5%	105599.000	110879.00		
			13th m	5%	110879.000	116423.00		
			14th m	5%	116423.000	122244.00		
			15th m	5%	122244.000	128356.00		
			16th m	5%	128356.000	134774.00		
			17th m	5%	134774.000	141513.00		
			18th m	5%	141513.000	148589.00		
			19th m	5%	148589.000	156018.00		
			20th m	5%	156018.000	163819.00		
			Total Cost from 10m upto 20m		1264965.000	1328214.00		
			Avg Rate per metre		***126497.000***	***132821.00***		
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			Including 25% for Kentledge	Including 5% for dewatering, if required	
			31st m	7.5%	167719.000	209649.00	220131.00	
			32nd	7.5%	180298.000	225373.00	236642.00	
			33rd m	7.5%	193820.000	242275.00	254389.00	
			34th m	7.5%	208357.000	260446.00	273468.00	
			35th m	7.5%	223984.000	279980.00	293979.00	
			36th m	7.5%	240783.000	300979.00	316028.00	
			37th m	7.5%	258842.000	323553.00	339731.00	
			38th m	7.5%	278255.000	347819.00	365210.00	
			39th m	7.5%	299124.000	373905.00	392600.00	
			40th m	7.5%	321558.000	401948.00	422045.00	
			Total Cost from 30m upto 40m		2372740.000	2965927	3114223	
			Avg Rate per metre		***237274.000***	***296593.00***	***311422.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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).			Including 20% for Kentledge	Including 5% for dewatering, if required	
			31st m	10%	353714.000	424457.00	445680.00	
			32nd	10%	389085.000	466902.00	490247.00	
			33rd m	10%	427994.000	513593.00	539273.00	
			34th m	10%	470793.000	564952.00	593200.00	
			35th m	10%	517872.000	621446.00	652518.00	
			36th m	10%	569659.000	683591.00	717771.00	
			37th m	10%	626625.000	751950.00	789548.00	
			38th m	10%	689288.000	827146.00	868503.00	
			39th m	10%	758217.000	909860.00	955353.00	
			40th m	10%	834039.000	1000847.00	1050889.00	
			Total Cost from 30m upto 40m		5637286.000	6764744	7102982	
			Avg Rate per metre		***563729.000***	***676474.00***	***710298.00***	
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	1.060	354.00	375.24	L-12
			Sinker (skilled)	day	4.500	442.00	1989.00	L-15
			Sinking helper (semi-skilled)	day	20.000	354.00	7080.00	L-14
			Diver	day	1.750	796.00	1393.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.000	976.11	9761.10	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.750	634.51	3013.92	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1277.50	
			Add for dewatering @ 5 per cent, if required				702.63	
			c) GST @ 12 % on (a+b)				3071.09	
			d) Overhead charges @ 20 % on (a+b+c)				5732.70	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3439.62	
			f) Cess @ 1% on (a+b+c+d+e)				378.36	
			Cost for 0.25m = a+b+c+d+e+f				38214.16	
			Rate per metre = (a+b+c+d+e+f)/0.25				152856.64	
						say	***152857.00***	
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	14.000	164.60	2304.40	M-104
			Electric detonator	each.	56.000	11.04	618.24	M-094/100
			b) Labour					
			Mate	day	1.440	354.00	509.76	L-12

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			Mazdoor	day	28.000	310.00	8680.00	L-13
			Mazdoor (Skilled)	day	4.500	442.00	1989.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	12.500	976.11	12201.38	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	4.000	634.51	2538.04	P&M-063
			Dewatering @ 5 per cent, if				736.97	
			Consumables in sinking @ 10 per cent of (c).				1547.64	
			d) GST @ 12 % on (a+b+c)				3830.63	
			e) Overhead charges @ 20 % on (a+b+c+d)				7150.51	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				4290.31	
			g) Cess @ 1% on (a+b+c+d+e+f)				471.93	
			Cost for 0.25m = a+b+c+d+e+f+g				47665.31	
			Rate per metre = (a+b+c+d+e+f+g)/0.25				190661.24	
						say	***190661.00***	
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	0.200	354.00	70.80	L-12
			Sinker (skilled)	day	1.250	442.00	552.50	L-15
			Sinking helper (semi-skilled)	day	3.750	354.00	1327.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.500	976.11	5368.61	P&M-075
			Consumables in sinking @10 per cent of (b)				536.86	
			c) GST @ 12 % on (a+b)				942.75	
			d) Overhead charges @ 20 % on (a+b+c)				1759.80	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1055.88	
			f) Cess @ 1% on (a+b+c+d+e)				116.15	
			Rate per metre = (a+b+c+d+e+f)				11730.85	
						say	***11731.00***	
12.19 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.17 m/hour					
			a) Labour					
			Mate	day	0.300	354.00	106.20	L-12
			Sinker	day	1.500	442.00	663.00	L-15
			Sinking helper (semi-skilled)	day	4.000	354.00	1416.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.880	976.11	5739.53	P&M-075

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Consumables in sinking @10 per cent of (b)				573.95	
			c) GST @ 12 % on (a+b)				1019.84	
			d) Overhead charges @ 20 % on (a+b+c)				1903.70	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1142.22	
			f) Cess @ 1% on (a+b+c+d+e)				125.64	
			Rate per metre = (a+b+c+d+e+f)				12690.08	
						say	***12690.00***	
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%	13325.000			
			12th m	5%	13991.000			
			13th m	5%	14691.000			
			14th m	5%	15426.000			
			15th m	5%	16197.000			
			16th m	5%	17007.000			
			17th m	5%	17857.000			
			18th m	5%	18750.000			
			19th m	5%	19688.000			
			20th m	5%	20672.000			
			Total Cost from 10m upto 20m		167604.000			
			Avg Rate per metre		***16760.000***			
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.			Including 20% for Kentledge		
			21st m	7.5%	22222.000	26666.00		
			22nd m	7.5%	23889.000	28667.00		
			23rd m	7.5%	25681.000	30817.00		
			24th m	7.5%	27607.000	33128.00		
			25th m	7.5%	29678.000	35614.00		
			26th m	7.5%	31904.000	38285.00		
			27th m	7.5%	34297.000	41156.00		
			28th m	7.5%	36869.000	44243.00		
			29th m	7.5%	39634.000	47561.00		
			30th m	7.5%	42607.000	51128.00		
			Total Cost from 20m upto 30m		314388.000	377265.00		
			Avg Rate per metre		***31439.000***	***37727.00***		
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.			Including 20% for Kentledge		
			31st m	10%	46868.000	56242.00		
			32nd	10%	51555.000	61866.00		
			33rd m	10%	56711.000	68053.00		
			34th m	10%	62382.000	74858.00		
			35th m	10%	68620.000	82344.00		
			36th m	10%	75482.000	90578.00		
			37th m	10%	83030.000	99636.00		
			38th m	10%	91333.000	109600.00		
			39th m	10%	100466.000	120559.00		
			40th m	10%	110513.000	132616.00		
			Total Cost from 30m upto 40m		746960.000	896352.00		
			Avg Rate per metre		***74696.000***	***89635.00***		
12.19		**B**	**Clayey Soil (Twin D Type Well)**					
			Unit = Running Meter					
			Taking output = 1 meter					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.16 m/hour					
			a) Labour					
			Mate	day	0.260	354.00	92.04	L-12
			Sinker (skilled)	day	2.500	442.00	1105.00	L-15
			Sinking helper (semi-skilled)	day	4.000	354.00	1416.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.250	976.11	6100.69	P&M-075
			Consumables in sinking @ 10 per cent of (b)				610.07	
			c) GST @ 12 % on (a+b)				1118.86	
			d) Overhead charges @ 20 % on (a+b+c)				2088.53	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1253.12	
			f) Cess @ 1% on (a+b+c+d+e)				137.84	
			Rate per metre = (a+b+c+d+e+f)				13922.15	
						say	***13922.00***	
12.19 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.15 m/hour					
			a) Labour					
			Mate	day	0.450	354.00	159.30	L-12
			Sinker	day	3.250	442.00	1436.50	L-15
			Sinking helper (semi-skilled)	day	6.000	354.00	2124.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.670	976.11	6510.65	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.500	634.51	2855.30	P&M-063
			Consumables in sinking @ 10 per cent of (b)				936.60	
			c) GST @ 12 % on (a+b)				1682.68	
			d) Overhead charges @ 20 % on (a+b+c)				3141.01	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1884.60	
			f) Cess @ 1% on (a+b+c+d+e)				207.31	
			Rate per metre = (a+b+c+d+e+f)				20937.95	
						say	***20938.00***	
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.				Including for dewatering @ 5% of cost, if required	
			11th m	5%	21985.000		23084.00	
			12th m	5%	23084.000		24238.00	
			13th m	5%	24238.000		25450.00	
			14th m	5%	25450.000		26723.00	
			15th m	5%	26723.000		28059.00	
			16th m	5%	28059.000		29462.00	
			17th m	5%	29462.000		30935.00	
			18th m	5%	30935.000		32482.00	
			19th m	5%	32482.000		34106.00	
			20th m	5%	34106.000		35811.00	
			Total Cost from 10m upto 20m		276524.000		290350.00	
			Avg Rate per metre		***27652.000***		***29035.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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).			Including 25% for Kentledge	Including 5% for dewatering, if required	
			31st m	7.5%	36664.000	45830.00	48122.00	
			32nd	7.5%	39414.000	49268.00	51731.00	
			33rd m	7.5%	42370.000	52963.00	55611.00	
			34th m	7.5%	45548.000	56935.00	59782.00	
			35th m	7.5%	48964.000	61205.00	64265.00	
			36th m	7.5%	52636.000	65795.00	69085.00	
			37th m	7.5%	56584.000	70730.00	74267.00	
			38th m	7.5%	60828.000	76035.00	79837.00	
			39th m	7.5%	65390.000	81738.00	85825.00	
			40th m	7.5%	70294.000	87868.00	92261.00	
			Total Cost from 30m upto 40m		518692.000	648367.00	680786.00	
			Avg Rate per metre		***51869.000***	***64837.00***	***68079.00***	
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).			Including 20% for Kentledge	Including 5% for dewatering, if	
			31st m	10%	77323.000	92788.00	97427.00	
			32nd	10%	85055.000	102066.00	107169.00	
			33rd m	10%	93561.000	112273.00	117887.00	
			34th m	10%	102917.000	123500.00	129675.00	
			35th m	10%	113209.000	135851.00	142644.00	
			36th m	10%	124530.000	149436.00	156908.00	
			37th m	10%	136983.000	164380.00	172599.00	
			38th m	10%	150681.000	180817.00	189858.00	
			39th m	10%	165749.000	198899.00	208844.00	
			40th m	10%	182324.000	218789.00	229728.00	
			Total Cost from 30m upto 40m		1232332.000	1478799.00	1552739.00	
			Avg Rate per metre		***123233.000***	***147880.00***	***155274.00***	
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	0.860	354.00	304.44	L-12
			Sinker (skilled)	day	4.500	442.00	1989.00	L-15
			Sinking helper (semi-skilled)	day	15.000	354.00	5310.00	L-14
			Diver	day	1.500	796.00	1194.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.330	976.11	8131.00	P&M-075
			Air compressor with pneumatic breakers	hour	6.000	634.51	3807.06	P&M-063

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Consumables in sinking @ 10 per cent of (b)				1193.81	
			Add for dewatering @ 5 per cent, if required				656.59	
			c) GST @ 12 % on (a+b)				2710.31	
			d) Overhead charges @ 20 % on (a+b+c)				5059.24	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3035.55	
			f) Cess @ 1% on (a+b+c+d+e)				333.91	
			Rate per metre = (a+b+c+d+e+f)				33724.91	
						say	***33725.00***	
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	10.000	164.60	1646.00	M-104
			Electric detonators	each.	40.000	11.04	441.60	M-094/100
			b) Labour					
			Mate	day	1.340	354.00	474.36	L-12
			Driller	day	2.000	354.00	708.00	L-06
			Blaster	day	0.250	354.00	88.50	L-03
			Mazdoor	day	25.000	310.00	7750.00	L-13
			Mazdoor (Skilled)	day	4.250	442.00	1878.50	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.000	976.11	9761.10	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.000	634.51	1903.53	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				1128.20	
			Consumables in sinking @ 10 per cent of (b).				1279.28	
			d) GST @ 12 % on (a+b+c)				3247.09	
			e) Overhead charges @ 20 % on (a+b+c+d)				6061.23	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3636.74	
			g) Cess @ 1% on (a+b+c+d+e+f)				400.04	
			Rate per metre = (a+b+c+d+e+f+g)				40404.17	
						say	***40404.00***	
12.20	1200		**Pneumatic sinking of wells with equipment of approved design, drawing and specifications worked by competent and trained personnel and comprising of compression and decompression chambers, reducers, two air locks separately for men and plant & materials, arrangement for supply of fresh air to working chambers, check valves, exhaust valves, shafts made from steel plates of riveted construction not less than 6 mm thick to withstand an air pressure of 0.50 MPa, controlled blasting of hard rock where required, staircases and 1 m wide landing plateforms with railing, arrangement for compression and 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.**					
			Unit - 1 cum					
			Taking output = 5 cum					
			a) Material					
			M35 grade RCC corbel provided for supporting of equipment (Dimensions as per ground conditions). Rate may be adopted vide Item 12.8 (H)	Cum	8.000	9909.00	79272.00	Item 12.8 (H)

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			HYSD bar reinforcement in corbel	tonne	0.480	59823.01	28715.04	M-082
			Blasting material					
			Gelatine 80 per cent	Kg	1.500	164.60	246.90	M-104
			Electric detonators	each	6.000	11.04	66.24	M-094/100
			b) Labour					
			Medical Officer	day	0.500	1327.00	663.50	L-16
			Para medical personnel	day	1.000	796.00	796.00	L-19
			Mate	day	1.860	354.00	658.44	L-12
			Driller	day	1.000	354.00	354.00	L-06
			Blaster	day	0.500	354.00	177.00	L-03
			Mazdoor (for cutting, blasting, cleaning, removal of Material etc.)	day	30.000	310.00	9300.00	L-13
			Mazdoor (Skilled) (for fixation and removal of adopter for air lock, carrying out mechanical and electrical operations and repairs and other skilled jobs.)	day	10.000	442.00	4420.00	L-15
			Diver	day	4.000	796.00	3184.00	L-07
			c) Machinery					
			(i) Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	6.000	input		P&M-082
			Induction and deinduction	L.S			95000.00	
			Erection at site and commissioning	L.S			145000.00	
			Usage of plant and equipment for pneumatic method of well sinking	hour	6.000	5081.42	30488.52	P&M-038
			Air compressor 250 cfm, 2 nos.	hour	2 x 6	575.22	6902.64	P&M-001
			Hire and running charges of crane of 15 tonne capacity	hour	6.000	809.73	4858.38	P&M-072
			Motorised barge of 20 tonne capacity	hour	6.000	2023.89	12143.34	P&M-066
			Boat to carry atleast 20 persons	hour	6.000	2023.89	12143.34	P&M-066
			Electric generating set 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Tipper 10 tonne capacity	hour	6.000	779.65	4677.90	P&M-048
			d) GST @ 12 % on (a+b+c)				43502.29	
			e) Overhead charges @ 20 % on (a+b+c+d)				81204.28	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				48722.57	
			g) Cess @ 1% on (a+b+c+d+e+f)				5359.48	
			Cost for 5 cum = a+b+c+d+e+f+g (see notes below)				620579.74	
			Rate per cum = (a+b+c+d+e+f+g)/5				124115.95	
						say	***124116.00***	

Note

1.The cost of induction, deinduction and erection of equipment shall be divided by the total quantity of pneumatic sinking for all the wells of a particular bridge to arrive at the per cum rate on account of this item.

2.Cost of pneumatic sinking per cum of individual wells will be added to the cost indicated at (1) above to arrive at the final rate of pneumatic sinking per cum.

3.The cost of induction and deinduction will depend upon the distance involved for shifting of equipment which may be assessed in individual cases as per actual ground conditions at the time of making of cost estimates.

4.In case pneumatic sinking is involved on a dry bed, the provision of barge and boat may be omitted.

5.The necessity and dimensions of the corbel will be as per actual ground conditions.

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			6.Small equipments like welding sets, pumps, vibrators, pneumatic tools, portable lamps, fire extinguishers, hose pipes etc., have not been included as the same are covered as items of minor T&P under overhead charges.					
			7.Depth of sinking shall be restricted to 30 m.					
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	1.200	601.77	722.12	M-006
			b) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor	day	0.300	310.00	93.00	L-13
			c) GST @ 12 % on (a+b)				98.24	
			d) Overhead charges @ 20 % on (a+b+c)				183.38	
			e) Contractor's profit @ 10 % on (a+b+c+d)				110.03	
			f) Cess @ 1% on (a+b+c+d+e)				12.10	
			Rate per cum (a+b+c+d+e+f)				1222.41	
						say	***1222.00***	
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	1.050	48312.00	50727.60	M-179
			b) Labour					
			Mate	day	1.240	354.00	438.96	L-12
			Fitter	day	6.000	442.00	2652.00	L-08
			Blacksmith	day	5.000	354.00	1770.00	L-01
			Welder	day	5.000	442.00	2210.00	L-02
			Mazdoor	day	10.000	310.00	3100.00	L-13
			Electrodes, cutting gas and other consumables @ 5 per cent on cost a (a) above.				2536.38	
			c) GST @ 12 % on (a+b)				7612.19	
			d) Overhead charges @ 20 % on (a+b+c)				14209.43	
			e) Contractor's profit @ 10 % on (a+b+c+d)				8525.66	
			f) Cess @ 1% on (a+b+c+d+e)				937.82	
			Rate for per MT (a+b+c+d+e+f)				94720.04	
						say	***94720.00***	
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	6.620	9996.00	66173.52	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV) (Including GST, OH, CP & Cess)					
			Concrete to be cast with a tremie pipe 200mm dia.					
			b) Machinery(for boring and construction)					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.000	6659.29	39955.74	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.500	433.63	216.82	P&M-013
			Hire and running charges of Bentonite pump	hour	6.000	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.300	1398.23	419.47	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.300	779.65	233.90	P&M-048
			Bentonite	kg	300.000	3.45	1035.00	M-071
			c) Labour					
			Mate/Supervisor	day	0.140	354.00	49.56	L-12
			Mazdoor	day	3.500	310.00	1085.00	L-13
			d) GST @ 12 % on (a+b+c)				5159.46	
			e) Overhead charges @ 20 % on (a+b+c+d)				9630.99	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				5778.59	
			g) Cess @ 1% on (a+b+c+d+e+f)				635.65	
			Cost for 15 m = a+b+c+d+d+e+f+g				130373.70	
			Rate per metre (a+b+c+d+e+f+g)/15				8691.58	
						say	***8692.00***	
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	7.850	9996.00	78468.60	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV) (Including GST, OH, CP & Cess)					
			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	6.000	6659.29	39955.74	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.500	433.63	216.82	P&M-013
			Hire and running charges of Bentonite pump	hour	6.000	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.400	1398.23	559.29	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.400	779.65	311.86	P&M-048
			Bentonite	kg	350.000	3.45	1207.50	M-071
			c) Labour					
			Mate/Supervisor	day	0.160	354.00	56.64	L-12

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	4.000	310.00	1240.00	L-13
			d) GST @ 12 % on (a+b+c)				5225.74	
			e) Overhead charges @ 20 % on (a+b+c+d)				9754.72	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				5852.83	
			g) Cess @ 1% on (a+b+c+d+e+f)				643.81	
			Cost for 10 m = a+b+c+d+d+e+f+g				143493.55	
			Rate per metre (a+b+c+d+e+f+g)/10				14349.36	
						say	***14349.00***	
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	10.170	9996.00	101659.32	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV) (Including GST, OH, CP & Cess) 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	6.000	6659.29	39955.74	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.500	433.63	216.82	P&M-013
			Hire and running charges of Bentonite pump	hour	6.000	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.500	1398.23	699.12	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.500	779.65	389.83	P&M-048
			Bentonite	kg	385.000	3.45	1328.25	M-071
			c) Labour					
			Mate/Supervisor	day	0.180	354.00	63.72	L-12
			Mazdoor	day	4.500	310.00	1395.00	L-13
			d) GST @ 12 % on (a+b+c)				5285.82	
			e) Overhead charges @ 20 % on (a+b+c+d)				9866.86	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				5920.12	
			g) Cess @ 1% on (a+b+c+d+e+f)				651.21	
			Cost for 9 m = a+b+c+d+d+e+f+g				167431.81	
			Rate per metre (a+b+c+d+e+f+g)/9				18603.53	
						say	***18604.00***	
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	17.660	9996.00	176529.36	Item 12.11 (C) iv

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV) (Including GST, OH, CP & Cess)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.000	61.06	9769.60	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.000	245.13	17159.10	M-124
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.000	201.77	10088.50	M-173
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories..	hour	6.000	6659.29	39955.74	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.500	742.48	371.24	P&M-070
			d) Labour					
			Mate/Supervisor	day	0.120	354.00	42.48	L-12
			Mazdoor	day	3.000	310.00	930.00	L-13
			e) GST @ 12 % on (a+b+c+d)				9398.00	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				17542.93	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				10525.76	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1157.83	
			Cost for 40 m = a+b+c+d+e+f+g+h				293470.54	
			Rate per metre (a+b+c+d+e+f+g+h)/40				7336.76	
						say	***7337.00***	
		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.					
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	23.550	9996.00	235405.80	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV) (Including GST, OH, CP & Cess)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.000	61.06	9769.60	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.000	245.13	17159.10	M-124
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.000	201.77	10088.50	M-173

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.000	6659.29	39955.74	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.500	742.48	371.24	P&M-070
			Hire and running charges for light crane for lowering reinforcement cage.	hour	0.500	433.63	216.82	P&M-013
			d) Labour					
			Mate/Supervisor	day	0.160	354.00	56.64	L-12
			Mazdoor	day	4.000	310.00	1240.00	L-13
			e) GST @ 12 % on (a+b+c+d)				9462.92	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				17664.11	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				10598.47	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1165.83	
			Cost for 30 m = a+b+c+d+e+f+g+h				353154.77	
			Rate per metre (a+b+c+d+e+f+g+h)/30				11771.83	
						say	***11772.00***	
		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.					
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	22.610	9996.00	226009.56	Item 12.11 (C) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV) (Including GST, OH, CP & Cess)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.000	61.06	9769.60	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.000	245.13	17159.10	M-124
			iii) Steel helmet on top of casing head during driving	Kg	50.000	201.77	10088.50	M-173
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.000	6659.29	39955.74	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.500	742.48	371.24	P&M-070

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Labour					
			Mate/Supervisor	day	0.180	354.00	63.72	L-12
			Mazdoor	day	4.500	310.00	1395.00	L-13
			e) GST @ 12 % on (a+b+c+d)				9456.35	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				17651.85	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				10591.11	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1165.02	
			Cost for 20 m = a+b+c+d+e+f+g+h				343676.79	
			Rate per metre (a+b+c+d+e+f+g+h)/20				17183.84	
						say	***17184.00***	
		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.					
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	1.000	400.00		
			b) Lateral load test	tonne	1.000	6300.00		
		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.					
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	5.120	9053.98	46356.38	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	354.00	531.00	L-10
			Mazdoor for concreting	day	20.000	310.00	6200.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator (capacity 33 KVA)	hour	6.000	453.98	2723.88	P&M-079
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3484.38	
			d) GST @ 12 % on (a+b+c)				10871.26	
			e) Overhead charges @ 20 % on (a+b+c+d)				20293.01	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				12175.81	
			g) Cess @ 1% on (a+b+c+d+e+f)				1339.34	
			Cost for 15 cum = a+b+c+d+e+f+g				135273.22	
			Rate per metre (a+b+c+d+e+f+g)/15				9018.21	
						say	***9018.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.38 A		(ii)	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	5.120	9053.98	46356.38	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-004
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mason	day	0.380	354.00	134.52	L-10
			Mazdoor for concreting	day	2.500	310.00	775.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2787.61	2090.71	P&M-002
			Generator 100 KVA	hour	0.75	849.56	637.17	P&M-080
			Loader (capacity 1 cum)	hour	0.750	1398.23	1048.67	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1132.74	2265.48	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	37.5L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	0.75	2576.11	1932.08	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3386.27	
			d) GST @ 12 % on (a+b+c)				10565.16	
			e) Overhead charges @ 20 % on (a+b+c+d)				19721.64	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				11832.98	
			g) Cess @ 1% on (a+b+c+d+e+f)				1301.63	
			Cost for 15 cum = a+b+c+d+e+f+g				131464.43	
			Rate per metre (a+b+c+d+e+f+g)/15				8764.30	
						say	***8764.00***	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		**B**	**RCC Grade M25**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	5.990	9053.98	54233.34	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	354.00	531.00	L-10
			Mazdoor for concreting	day	20.000	310.00	6200.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator (capacity 33 KVA)	hour	6.000	453.98	2723.88	P&M-079

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3799.46	
			d) GST @ 12 % on (a+b+c)				11854.30	
			e) Overhead charges @ 20 % on (a+b+c+d)				22128.03	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13276.82	
			g) Cess @ 1% on (a+b+c+d+e+f)				1460.45	
			Cost for 15 cum = a+b+c+d+e+f+g				147505.44	
			Rate per metre (a+b+c+d+e+f+g)/15				9833.70	
						say	***9834.00***	
12.38B		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	5.990	9053.98	54233.34	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-004
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mason	day	0.380	354.00	134.52	L-10
			Mazdoor for concreting	day	2.500	310.00	775.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2787.61	2090.71	P&M-002
			Generator 125 KVA	hour	0.75	1003.54	752.66	P&M-018
			Loader (capacity 1 cum)	hour	0.750	1398.23	1048.67	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1132.74	2265.48	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	37.5L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	0.75	2576.11	1932.08	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3705.97	
			d) GST @ 12 % on (a+b+c)				11562.62	
			e) Overhead charges @ 20 % on (a+b+c+d)				21583.56	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				12950.14	
			g) Cess @ 1% on (a+b+c+d+e+f)				1424.51	
			Cost for 15 cum = a+b+c+d+e+f+g				143876.00	
			Rate per metre (a+b+c+d+e+f+g)/15				9591.73	
						say	***9592.00***	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		**C**	**RCC Grade M30**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	6.100	9053.98	55229.28	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	354.00	531.00	L-10

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor for concreting	day	20.000	310.00	6200.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator (capacity 33 KVA)	hour	6.000	453.98	2723.88	P&M-079
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3839.29	
			d) GST @ 12 % on (a+b+c)				11978.59	
			e) Overhead charges @ 20 % on (a+b+c+d)				22360.04	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13416.02	
			g) Cess @ 1% on (a+b+c+d+e+f)				1475.76	
			Cost for 15 cum = a+b+c+d+e+f+g				149052.02	
			Rate per metre (a+b+c+d+e+f+g)/15				9936.80	
						say	***9937.00***	
12.38C		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	6.100	9053.98	55229.28	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-004
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mason	day	0.380	354.00	134.52	L-10
			Mazdoor for concreting	day	2.500	310.00	775.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2787.61	2090.71	P&M-002
			Generator 100 KVA	hour	0.75	849.56	637.17	P&M-080
			Loader (capacity 1 cum)	hour	0.750	1398.23	1048.67	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1132.74	2265.48	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	37.5L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	0.75	2576.11	1932.08	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3741.19	
			d) GST @ 12 % on (a+b+c)				11672.50	
			e) Overhead charges @ 20 % on (a+b+c+d)				21788.67	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13073.20	
			g) Cess @ 1% on (a+b+c+d+e+f)				1438.05	
			Cost for 15 cum = a+b+c+d+e+f+g				145243.26	
			Rate per metre (a+b+c+d+e+f+g)/15				9682.88	
						say	***9683.00***	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		**D**	**RCC Grade M35**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	6.330	9053.98	57311.69	M-081

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	354.00	531.00	L-10
			Mazdoor	day	20.000	310.00	6200.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28	hour	6.000	269.91	1619.46	P&M-009
			Generator (capacity 33 KVA)	hour	6.000	453.98	2723.88	P&M-079
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3922.59	
			d) GST @ 12 % on (a+b+c)				12238.48	
			e) Overhead charges @ 20 % on (a+b+c+d)				22845.16	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13707.10	
			g) Cess @ 1% on (a+b+c+d+e+f)				1507.78	
			Cost for 15 cum = a+b+c+d+e+f+g				152285.84	
			Rate per metre (a+b+c+d+e+f+g)/15				10152.39	
						say	***10152.00***	
12.38D		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	6.330	9053.98	57311.69	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-004
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.160	354.00	56.64	L-12
			Mason	day	0.380	354.00	134.52	L-10
			Mazdoor for concreting	day	2.500	310.00	775.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.750	2787.61	2090.71	P&M-002
			Generator 125 KVA	hour	0.750	1003.54	752.66	P&M-018
			Loader (capacity 1 cum)	hour	0.750	1398.23	1048.67	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.000	1132.74	2265.48	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	37.5L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	0.750	2576.11	1932.08	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3829.10	
			d) GST @ 12 % on (a+b+c)				11946.80	
			e) Overhead charges @ 20 % on (a+b+c+d)				22300.69	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13380.41	
			g) Cess @ 1% on (a+b+c+d+e+f)				1471.85	
			Cost for 15 cum = a+b+c+d+e+f+g				148656.40	
			Rate per metre (a+b+c+d+e+f+g)/15				9910.43	
						say	***9910.00***	
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					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Material					
			Cement	tonne	4.130	9053.98	37392.94	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			40 mm aggregate	cum	8.100	1393.81	11289.86	M-055
			20 mm Aggregate	cum	4.050	1784.07	7225.48	M-053
			10 mm Aggregate	cum	1.350	1951.33	2634.30	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	354.00	531.00	L-10
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			d) GST @ 12 % on (a+b+c)				8878.00	
			e) Overhead charges @ 20 % on (a+b+c+d)				16572.26	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				9943.36	
			g) Cess @ 1% on (a+b+c+d+e+f)				1093.77	
			Cost for 15 cum = a+b+c+d+e+f+g				110470.70	
			Rate per metre (a+b+c+d+e+f+g)/15				7364.71	
						say	***7365.00***	
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	1.050	59823.01	62814.16	M-082
			Binding wire	Kg	6.000	89.38	536.28	M-072
			b) Labour for cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.400	354.00	141.60	L-12
			Blacksmith	day	2.000	442.00	884.00	L-02
			Mazdoor	day	6.000	310.00	1860.00	L-13
			c) GST @ 12 % on (a+b)				7948.32	
			d) Overhead charges @ 20 % on (a+b+c)				14836.87	
			e) Contractor's profit @ 10 % on (a+b+c+d)				8902.12	
			f) Cess @ 1% on (a+b+c+d+e)				979.23	
			Cost per MT = a+b+c+d+e+f				98902.58	
						say	**98902.58**	
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	1.050	59823.01	62814.16	M-126
			Binding wire	Kg	6.000	89.38	536.28	M-072
			b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.430	354.00	152.22	L-12
			Blacksmith	day	2.250	442.00	994.50	L-02
			Mazdoor	day	6.500	310.00	2015.00	L-13
			c) GST @ 12 % on (a+b)				7981.46	
			d) Overhead charges @ 20 % on (a+b+c)				14898.72	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) Contractor's profit @ 10 % on (a+b+c+d)				8939.23	
			f) Cess @ 1% on (a+b+c+d+e)				983.32	
			Rate for per MT (a+b+c+d+e+f)				99314.89	
						say	***99315.00***	
12.42	**1900**		**Providing and Installation of Steel driven Piles with corrosion resistant / Treated Structural Steel including welding of joints, fabrication of Shoe, Cap etc, as per detailed drawing and specification complete and as per direction of the Engineer in charge**					
			Unit= 1.00 MT					
			Analysis bas on ISWB 600, upto 40 metre depth					
			a) Material					
			Corrosion resistant structural steel Gusset plates welded for joints, shoe / cap arrangement.	tonne	0.390	68017.70	26526.90	M-087
			Fabrication and placing in position charges for Corrosion resistant structural steel Gusset plates welded for joints, shoe / cap arrangement at site of work.	tonne	0.390	57896.00	22579.44	Rate in item 12.10 less Input M-179
			Corrosion resistant structural steel ISWB 600	tonne	5.800	68017.70	394502.66	M-087
			Fabrication and placing in position charges for corrosion resistant structural steel ISWB 600 at site of work.	tonne	5.800	57896.00	335796.80	Rate in item 12.10 less Input M-179
			b) Materials for Pile shoes					
			Steel helmet and cushion block on top of casing head during driving.	Kg	50.000	201.77	10088.50	M-173
			c) Machinery					
			Hire and running charges of pilling rig including double acting pile driving hammer complete with power unit and accessories.	Hour	6.000	6659.29	39955.74	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	Hour	0.500	742.48	371.24	P&M-070
			d) Labour					
			Mate / Supervisor		0.180	354.00	63.72	L-12
			Mazdoor		4.500	310.00	1395.00	L-13
			e) GST @ 12 % on (b+c+d)				6224.90	
			f) Overhead charges @ 20 % on (b+c+d+e)				11619.82	
			g) Overhead charges @ 20 % on (b+c+d+e+f)				6971.89	
			h) Cess @ 1% on (b+c+d+e+f+g)				8560.97	
			Cost for 40.00 metre (0.39 + 5.80) = 6.194 MT = a + b + c + d + e + f + g + h			Per 6.194 MT	864657.58	
			Rate per metre (a+b+c+d+e+f+g+h)/(0.394+5.80)			Per 1.00 MT	139595.99	
						Say	**139596.00**	

Chapter – 13

SUBSTRUCTURE

Preamble:

1 Although, substructure are generally constructed in cement concrete, the rate for brick and stone masonry in CM 1:3 have also been included which can be adopted/permitted by design.

2 The cost of formwork will vary with the height and cross-section of the substructure. Provision has been made accordingly.

3 Bridge bearing, being commercial item produced by specialised firms with imported technology and parts, the rates for the same are ascertained by quotation from the market for the approved design and technical specifications.

4 Filter media and backfilling behind abutment are required to be provided as per guidelines in IRC:78- 2000.

5 Weep holes shall be provided as per specifications.

6 In case of roller-cum-rocker bearings, only full circular rollers are to be provided.

7 Bearing shall be set truly level so as to have full and even seating.

8 For elastomeric bearings, the concrete surface shall be leveled such that the variation is not more than 1.5 mm from a straight edge placed in any direction across the area.

9 The bearing should be procured only from those manufacturers who have been prequalified by the Ministry of Road Transport and Highways.

10 The bottoms of girders resting on the bearing shall be plane and truly horizontal.

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

Sr No	Ref. to MoRTH/ DSR 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	500.000	9.73	4865.00	M-079
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis) (Excluding GST,OH,CP &Cess)	cum	0.240	5543.00	1330.32	Item 12.6 (A)
			b) Labour					
			Mate	day	0.060	354.00	21.24	L-12
			Mason	day	0.800	442.00	353.60	L-11
			Mazdoor	day	0.800	310.00	248.00	L-13
			Add for scaffolding @ 5 per cent of cost of material and labour				340.91	
			c) GST @ 12 % on (a+b)				859.09	
			d) Overhead charges @ 20 % on (a+b+c)				1603.63	
			e) Contractor's profit @ 10 % on (a+b+c+d)				962.18	
			f) Cess @ 1% on (a+b+c+d+e)				105.84	
			Rate per cum (a+b+c+d+e+f)				10689.81	
						say	***10690.00***	
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)(Excluding GST,OH,CP &Cess)	cum	0.030	5543.00	166.29	Item 12.6 (A)
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mason	day	0.500	442.00	221.00	L-11
			Mazdoor	day	0.500	310.00	155.00	L-13
			c) GST @ 12 % on (a+b)				66.77	
			d) Overhead charges @ 20 % on (a+b+c)				124.64	
			e) Contractor's profit @ 10 % on (a+b+c+d)				74.79	
			f) Cess @ 1% on (a+b+c+d+e)				8.23	
			Rate per 10 sqm (a+b+c+d+e+f)				830.88	
						say	***83.10***	
	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) (Excluding GST,OH,CP &Cess)	cum	0.144	5543.00	798.19	Item 12.6 (A)
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mason	day	0.500	442.00	221.00	L-11
			Mazdoor	day	0.500	310.00	155.00	L-13
			c) GST @ 12 % on (a+b)				142.60	
			d) Overhead charges @ 20 % on (a+b+c)				266.19	
			e) Contractor's profit @ 10 % on (a+b+c+d)				159.71	
			f) Cess @ 1% on (a+b+c+d+e)				17.57	
			Rate per 10 sqm (a+b+c+d+e+f)				1774.42	
						say	***177.40***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
	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.					
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	1.000	576.11	576.11	M-148
			Through and bond stone	No	7.000	14.16	99.12	M-182
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6) (Excluding GST,OH,CP &Cess)	cum	0.330	5543.00	1829.19	Item 12.6 (A)
			b) Labour					
			Mate	day	0.100	354.00	35.40	L-12
			Mason	day	1.200	442.00	530.40	L-11
			Mazdoor	day	1.200	310.00	372.00	L-13
			Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				172.11	
			c) GST @ 12 % on (a+b)				433.72	
			d) Overhead charges @ 20 % on (a+b+c)				809.61	
			e) Contractor's profit @ 10 % on (a+b+c+d)				485.77	
			f) Cess @ 1% on (a+b+c+d+e)				53.43	
			Rate per cum (a+b+c+d)				5396.86	
						say	***5397.00***	
13.4		**B**	**Coursed rubble masonry (first sort)** ***Unit = cum*** ***Taking output = 1 cum***					
			a) Material					
			Stone	cum	1.100	576.11	633.72	M-148
			Through and bond stone	each	7.000	14.16	99.12	M-182
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6) (Excluding GST,OH,CP &Cess)	cum	0.300	5543.00	1662.90	Item 12.6 (A)
			b) Labour					
			Mate	day	0.120	354.00	42.48	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	1.500	310.00	465.00	L-13
			Add for scaffolding @ 5 per cent of cost of material and labour				178.31	
			c) GST @ 12 % on (a+b)				449.34	
			d) Overhead charges @ 20 % on (a+b+c)				838.77	
			e) Contractor's profit @ 10 % on (a+b+c+d)				503.26	
			f) Cess @ 1% on (a+b+c+d+e)				55.36	
			Rate per cum (a+b+c+d+e+f)				5591.26	
						say	***5591.00***	
13.4		**C**	**Ashlar masonry (first sort)**					
			Plain ashlar ***Unit = cum*** ***Taking output = 1 cum***					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Material					
			Stone	cum	1.110	576.11	639.48	M-169
			Through and bond stone (7no.x0.24mx0.24mx0.39m = 0.16 cu.m)	each	7.000	14.16	99.12	M-182
			Cement mortar 1:3 (Rate as in Item 12.6) (Excluding GST,OH,CP &Cess)	cum	0.330	5543.00	1829.19	Item 12.6 (A)
			b) Labour for masonry work					
			Mate	day	0.200	354.00	70.80	L-12
			Mason	day	2.500	442.00	1105.00	L-11
			Mazdoor	day	2.500	310.00	775.00	L-13
			Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				225.93	
			c) GST @ 12 % on (a+b)				569.34	
			d) Overhead charges @ 20 % on (a+b+c)				1062.77	
			e) Contractor's profit @ 10 % on (a+b+c+d)				637.66	
			f) Cess @ 1% on (a+b+c+d+e)				70.14	
			Rate per cum (a+b+c+d+e+f)				7084.43	
						say	***7084.00***	
	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) (Excluding GST,OH,CP &Cess)				5072.00	Item 12.8 (A)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		507.20	
			e) GST @ 12 % on (a+b+c+d)				669.50	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1249.74	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				749.84	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				82.48	
			Rate perm (a+b+c+d+e+f+g+h)				8330.76	
						say	***8331.00***	
13.5		**B**	**PCC Grade M20**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (B) PCC 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) (Excluding GST,OH,CP &Cess)				5649.00	Item 12.8 (B) PCC

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		564.90	
			e) GST @ 12 % on (a+b+c+d)				745.67	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1391.91	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				835.15	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				91.87	
			Rate perm (a+b+c+d+e+f+g+h)				9278.50	
						say	***9279.00***	
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 (excluding GST,OH,CP &Cess)				6150.00	Item 12.8 (D) Case I
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		615.00	
			e) GST @ 12 % on (a+b+c+d)				811.80	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1515.36	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				909.22	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				100.01	
			Rate perm (a+b+c+d+e+f+g+h)				10101.39	
						say	***10101.00***	
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 (excluding GST,OH,CP &Cess)				5967.00	Item 12.8 (D) Case II
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		596.70	
			e) GST @ 12 % on (a+b+c+d)				787.64	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1470.27	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				882.16	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				97.04	
			Rate perm (a+b+c+d+e+f+g+h)				9800.81	
						say	***9801.00***	
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 (Excluding GST,OH,CP &Cess)				6150.00	Item 12.8 (D) Case I
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.000		738.00	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		123.00	
			e) GST @ 12 % on (a+b+c+d)				841.32	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1570.46	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				942.28	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				103.65	
			Rate perm (a+b+c+d+e+f+g+h)				10468.71	
						say	***10469.00***	
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 (Excluding GST,OH,CP &Cess)				5967.00	
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.000		716.04	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		119.34	
			e) GST @ 12 % on (a+b+c+d)				816.29	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1523.73	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				914.24	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				100.57	
			Rate perm (a+b+c+d+e+f+g+h)				10157.21	
						say	***10157.00***	
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 (Excluding GST,OH,CP &Cess)				6150.00	Item 12.8 (D) Case I
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		922.50	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		246.00	
			e) GST @ 12 % on (a+b+c+d)				878.22	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1639.34	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				983.61	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				108.20	
			Rate perm (a+b+c+d+e+f+g+h)				10927.87	
						say	***10928.00***	
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 (Excluding GST,OH,CP &Cess)				5967.00	Item 12.8 (D) Case II
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		895.05	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		238.68	
			e) GST @ 12 % on (a+b+c+d)				852.09	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1590.56	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				954.34	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				104.98	
			Rate perm (a+b+c+d+e+f+g+h)				10602.70	
						say	***10603.00***	
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 (Excluding GST,OH,CP &Cess)				6204.00	12.8 (F) Case I
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		620.40	
			e) GST @ 12 % on (a+b+c+d)				818.93	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1528.67	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				917.20	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				100.89	
			Rate perm (a+b+c+d+e+f+g+h)				10190.09	
						say	***10190.00***	
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 (Excluding GST,OH,CP &Cess)				6016.00	12.8 (F) Case II
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		601.60	
			e) GST @ 12 % on (a+b+c+d)				794.11	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1482.34	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				889.41	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				97.83	
			Rate perm (a+b+c+d+e+f+g+h)				9881.29	
						say	***9881.00***	
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 (Excluding GST,OH,CP &Cess)				6204.00	12.8 (F) Case I
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.000		744.48	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		124.08	
			e) GST @ 12 % on (a+b+c+d)				848.71	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1584.25	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				950.55	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				104.56	
			Rate perm (a+b+c+d+e+f+g+h)				10560.63	
						say	***10561.00***	
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 (Excluding GST,OH,CP &Cess)				6016.00	Item 12.8 (F) Case II
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.000		721.92	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		120.32	
			e) GST @ 12 % on (a+b+c+d)				822.99	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1536.25	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				921.75	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				101.39	
			Rate perm (a+b+c+d+e+f+g+h)				10240.62	
						say	***10241.00***	
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 (Excluding GST,OH,CP &Cess)				6204.00	12.8 (F)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		930.60	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		248.16	
			e) GST @ 12 % on (a+b+c+d)				885.93	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1653.74	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				992.24	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				109.15	
			Rate perm (a+b+c+d+e+f+g+h)				11023.82	
						say	***11024.00***	
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 (Excluding GST,OH,CP &Cess)				6016.00	Item 12.8 (F) Case II
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		902.40	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		240.64	
			e) GST @ 12 % on (a+b+c+d)				859.08	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1603.62	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				962.17	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				105.84	
			Rate perm (a+b+c+d+e+f+g+h)				10689.75	
						say	***10690.00***	
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 (Excluding GST,OH,CP &Cess)				5849.00	Item 12.8 (C) Case I
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		584.90	
			e) GST @ 12 % on (a+b+c+d)				772.07	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1441.19	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				864.72	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				95.12	
			Rate perm (a+b+c+d+e+f+g+h)				9607.00	
						say	***9607.00***	
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 (Excluding GST,OH,CP &Cess)				5663.00	Item 12.8 (C) Case II
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		566.30	
			e) GST @ 12 % on (a+b+c+d)				747.52	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1395.36	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				837.22	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				92.09	
			Rate perm (a+b+c+d+e+f+g+h)				9301.49	
						say	***9301.00***	
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 (Excluding GST,OH,CP &Cess)				5849.00	Item 12.8 (C) Case I
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.000		701.88	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		116.98	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST @ 12 % on (a+b+c+d)				800.14	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1493.60	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				896.16	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				98.58	
			Rate perm (a+b+c+d+e+f+g+h)				9956.34	
						say	***9956.00***	
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 (Excluding GST,OH,CP &Cess)				5663.00	Item 12.8 (C) Case II
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.000		679.56	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		113.26	
			e) GST @ 12 % on (a+b+c+d)				774.70	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1446.10	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				867.66	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				95.44	
			Rate perm (a+b+c+d+e+f+g+h)				9639.72	
						say	***9640.00***	
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 (Excluding GST,OH,CP &Cess)				5849.00	Item 12.8 (C) Case I
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		877.35	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		233.96	
			e) GST @ 12 % on (a+b+c+d)				835.24	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1559.11	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				935.47	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				102.90	
			Rate perm (a+b+c+d+e+f+g+h)				10393.03	
						say	***10393.00***	
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 (Excluding GST,OH,CP &Cess)				5663.00	Item 12.8 (C) Case II
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		849.45	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		226.52	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST @ 12 % on (a+b+c+d)				808.68	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1509.53	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				905.72	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				99.63	
			Rate perm (a+b+c+d+e+f+g+h)				10062.53	
						say	***10063.00***	
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 (Excluding GST,OH,CP &Cess)				6356.00	Item 12.8 (E) Case I
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		635.60	
			e) GST @ 12 % on (a+b+c+d)				838.99	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1566.12	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				939.67	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				103.36	
			Rate perm (a+b+c+d+e+f+g+h)				10439.74	
						say	***10440.00***	
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 (Excluding GST,OH,CP &Cess)				6268.00	Item 12.8 (E) Case II
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		626.80	
			e) GST @ 12 % on (a+b+c+d)				827.38	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1544.44	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				926.66	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				101.93	
			Rate perm (a+b+c+d+e+f+g+h)				10295.21	
						say	***10295.00***	
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					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I (Excluding GST,OH,CP &Cess)				6356.00	Item 12.8 (E) Case I
			d) formwork					
			Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.800		750.01	
			Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.800		114.41	
			e) GST @ 12 % on (a+b+c+d)				866.45	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1617.37	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				970.42	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				106.75	
			Rate perm (a+b+c+d+e+f+g+h)				10781.41	
						say	***10781.00***	
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 (Excluding GST,OH,CP &Cess)				6268.00	Item 12.8 (E) Case II
			d) formwork					
			Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.800		739.62	
			Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.800		112.82	
			e) GST @ 12 % on (a+b+c+d)				854.45	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1594.98	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				956.99	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				105.27	
			Rate perm (a+b+c+d+e+f+g+h)				10632.13	
						say	***10632.00***	
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 (Excluding GST,OH,CP &Cess)				6356.00	Item 12.8 (E) Case I
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		953.40	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		254.24	
			e) GST @ 12 % on (a+b+c+d)				907.64	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1694.26	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1016.55	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				111.82	
			Rate perm (a+b+c+d+e+f+g+h)				11293.91	
						say	***11294.00***	
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 (Excluding GST,OH,CP &Cess)				6268.00	Item 12.8 (E) Case II
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		940.20	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		250.72	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST @ 12 % on (a+b+c+d)				895.07	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1670.80	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1002.48	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				110.27	
			Rate perm (a+b+c+d+e+f+g+h)				11137.54	
						say	***11138.00***	
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 .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I (Excluding GST,OH,CP &Cess)				6387.00	Item 12.8 (G) Case I
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		638.70	
			e) GST @ 12 % on (a+b+c+d)				843.08	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1573.76	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				944.25	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				103.87	
			Rate perm (a+b+c+d+e+f+g+h)				10490.66	
						say	***10491.00***	
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 (Excluding GST,OH,CP &Cess)				6201.00	Item 12.8 (G) Case II
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		620.10	
			e) GST @ 12 % on (a+b+c+d)				818.53	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1527.93	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				916.76	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				100.84	
			Rate perm (a+b+c+d+e+f+g+h)				10185.16	
						say	***10185.00***	
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					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I (Excluding GST,OH,CP &Cess)				6387.00	Item 12.8 (G) Case I
			d) formwork					
			Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.500		734.51	
			Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.600		102.19	
			e) GST @ 12 % on (a+b+c+d)				866.84	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1618.11	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				970.87	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				106.80	
			Rate perm (a+b+c+d+e+f+g+h)				10786.32	
						say	***10786.00***	
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 (Excluding GST,OH,CP &Cess)				6201.00	Item 12.8 (G) Case II
			d) formwork					
			Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.500		713.12	
			Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.600		99.22	
			e) GST @ 12 % on (a+b+c+d)				841.60	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1570.99	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				942.59	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				103.69	
			Rate perm (a+b+c+d+e+f+g+h)				10472.21	
						say	***10472.00***	
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					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I (Excluding GST,OH,CP &Cess)				6387.00	Item 12.8 (G) Case I
			d) formwork					
			Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.000		894.18	
			Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.500		223.55	
			e) GST @ 12 % on (a+b+c+d)				900.57	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1681.06	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1008.64	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				110.95	
			Rate perm (a+b+c+d+e+f+g+h)				11205.95	
						say	***11206.00***	
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 (Excluding GST,OH,CP &Cess)				6201.00	Item 12.8 (G) Case II
			d) formwork					
			Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.000		868.14	
			Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.500		217.04	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST @ 12 % on (a+b+c+d)				874.34	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1632.10	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				979.26	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				107.72	
			Rate perm (a+b+c+d+e+f+g+h)				10879.60	
						say	***10880.00***	
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 .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I (Excluding GST,OH,CP &Cess)				6525.00	Item 12.8 (H) Case I
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		652.50	
			e) GST @ 12 % on (a+b+c+d)				861.30	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1607.76	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				964.66	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				106.11	
			Rate perm (a+b+c+d+e+f+g+h)				10717.33	
						say	***10717.00***	
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 (Excluding GST,OH,CP &Cess)				6443.00	Item 12.8 (H) Case II
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.000		644.30	
			e) GST @ 12 % on (a+b+c+d)				850.48	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1587.56	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				952.53	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				104.78	
			Rate perm (a+b+c+d+e+f+g+h)				10582.65	
						say	***10583.00***	
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 .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I (Excluding GST,OH,CP &Cess)				6525.00	Item 12.8 (H) Case I
			d) formwork					
			Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.000		717.75	
			Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.400		91.35	
			e) GST @ 12 % on (a+b+c+d)				880.09	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1642.84	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				985.70	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				108.43	
			Rate perm (a+b+c+d+e+f+g+h)				10951.16	
						say	***10951.00***	
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 (Excluding GST,OH,CP &Cess)				6443.00	Item 12.8 (H) Case II
			d) formwork					
			Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.000		708.73	
			Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.400		90.20	
			e) GST @ 12 % on (a+b+c+d)				869.03	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1622.19	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				973.32	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				107.06	
			Rate perm (a+b+c+d+e+f+g+h)				10813.53	
						say	***10814.00***	
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					
	Case I		**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I (Excluding GST,OH,CP &Cess)				6525.00	Item 12.8 (H) Case I
			d) formwork					
			Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.000		848.25	
			Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.000		195.75	
			e) GST @ 12 % on (a+b+c+d)				908.28	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1695.46	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1017.27	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				111.90	
			Rate perm (a+b+c+d+e+f+g+h)				11301.91	
						say	***11302.00***	
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 (Excluding GST,OH,CP &Cess)				6443.00	Item 12.8 (H) Case II
			d) formwork					
			Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.000		837.59	
			Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.000		193.29	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST @ 12 % on (a+b+c+d)				896.87	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1674.15	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1004.49	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				110.49	
			Rate perm (a+b+c+d+e+f+g+h)				11159.88	
						say	***11160.00***	
	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	1.050	59823.01	62814.16	M-082
			Binding wire	kg	6.000	89.38	536.28	M-072
			b) Labour for cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.340	354.00	120.36	L-12
			Blacksmith	day	2.000	442.00	884.00	L-02
			Mazdoor	day	6.500	310.00	2015.00	L-13
			c) GST @ 12 % on (a+b)				7964.38	
			d) Overhead charges @ 20 % on (a+b+c)				14866.84	
			e) Contractor's profit @ 10 % on (a+b+c+d)				8920.10	
			f) Cess @ 1% on (a+b+c+d+e)				981.21	
			Rate for per MT (a+b+c+d)				99102.33	
						say	***99102.00***	
13.7	**1600 & 2200**		**Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and Technical Specification**					
			Unit = MT					
			Taking output = 1 MT					
			a) Material					
			MS bars including 5 per cent overlaps and wastage	tonne	1.050	59823.01	62814.16	M-126
			Binding wire	kg	6.000	89.38	536.28	M-072
			b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.280	354.00	99.12	L-12
			Blacksmith	day	1.500	442.00	663.00	L-02
			Mazdoor	day	5.500	310.00	1705.00	L-13
			c) GST @ 12 % on (a+b)				7898.11	
			d) Overhead charges @ 20 % on (a+b+c)				14743.13	
			e) Contractor's profit @ 10 % on (a+b+c+d)				8845.88	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Cess @ 1% on (a+b+c+d+e)				973.05	
			Rate for per MT (a+b+c+d)				98277.73	
						say	***98278.00***	
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	31.500	34.51	1087.07	M-056
			Average length of weep hole is taken as one metre for the purpose of estimating.					
			MS clamp	each.	30.000	61.06	1831.80	M-123
			collar for AC pipe (average) taking 10% of above pipe rate	each.	10.000	3.45	34.50	M-056/10
			Cement mortar 1:3 (Rate as in Item 12.6) (Excluding GST,OH,CP &Cess)	cum	0.050	5543.00	277.15	Item 12.6 (A)
			b) Labour					
			Mate	day	0.030	354.00	10.62	L-12
			Mason	day	0.500	442.00	221.00	L-11
			Mazdoor	day	0.250	310.00	77.50	L-13
			c) GST @ 12 % on (a+b)				424.76	
			d) Overhead charges @ 20 % on (a+b+c)				792.88	
			e) Contractor's profit @ 10 % on (a+b+c+d)				475.73	
			f) Cess @ 1% on (a+b+c+d+e)				52.33	
			Cost for 30 m = a+b+c+d+e+f				5285.34	
			Rate per m (a+b+c+d+e+f)/30				176.18	
						say	***176.00***	
	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	0.280	354.00	99.12	L-12
			Mazdoor	day	7.000	310.00	2170.00	L-13
			b) Material					
			Granular material	cum	12.000	434.51	5214.12	M-009
			c) Machinery					
			Plate compactor/power rammer	hour	2.500	338.05	845.13	P&M-086
			Water Tanker	hour	0.050	544.25	27.21	P&M-060
			d) GST @ 12 % on (a+b+c)				1002.67	
			e) Overhead charges @ 20 % on (a+b+c+d)				1871.65	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1122.99	
			g) Cess @ 1% on (a+b+c+d+e+f)				123.53	
			Cost for 10 cum of granular backfill = a+b+c+d+e+f+g				12476.42	
			Rate per cum = (a+b+c+d+e+f+g)/10				1247.64	
						say	***1248.00***	

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
13.9		B	**Sandy material**					
			a) Labour					
			Mate	day	0.280	354.00	99.12	L-12
			Mazdoor for filling, watering, ramming etc.	day	7.000	310.00	2170.00	L-13
			b) Material					
			Sand	cum	12.000	601.77	7221.24	M-006
			c) Machinery					
			Plate compactor/power rammer	hour	2.500	338.05	845.13	P&M-086
			Water Tanker	hour	0.060	544.25	32.66	P&M-060
			d) GST @ 12 % on (a+b+c)				1244.18	
			e) Overhead charges @ 20 % on (a+b+c+d)				2322.47	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1393.48	
			g) Cess @ 1% on (a+b+c+d+e+f)				153.28	
			Cost for 10 cum of sandy backfill = a+b+c+d+e				15481.56	
			Rate per cum = (a+b+c+d+e)/10				1548.16	
						say	***1548.00***	
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	0.320	354.00	113.28	L-12
			Mazdoor for filling, watering, ramming etc.	day	7.000	310.00	2170.00	L-13
			Mazdoor (Skilled)	day	1.000	442.00	442.00	L-15
			b) Material					
			Filter media of stone aggregate conforming to clause 2504.2.2. of MoRTH specifications.	cum	12.000	1283.19	15398.28	M-012
			c) Machinery					
			Water Tanker of 6 KL capacity	hour	0.060	544.25	32.66	P&M-060
			d) GST @ 12 % on (a+b+c)				2178.75	
			e) Overhead charges @ 20 % on (a+b+c+d)				4066.99	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				2440.20	
			g) Cess @ 1% on (a+b+c+d+e+f+g)				268.42	
			cost for 10 cum of Fiter Media = a+b+c+d+e+f+g				27110.58	
			Rate per cum = (a+b+c+d+e+f+g)/10				2711.06	
						say	***2711.00***	
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	0.060	354.00	21.24	L-12
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15
			Mazdoor	day	1.000	310.00	310.00	L-13

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			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.	1.000	337300.88	337300.88	M-065
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				3373.01	
			c) GST @ 12 % on (a+b)				40947.14	
			d) Overhead charges @ 20 % on (a+b+c)				76434.65	
			e) Contractor's profit @ 10 % on (a+b+c+d)				45860.79	
			f) Cess @ 1% on (a+b+c+d+e)				5044.69	
			Cost for 250 tonnes capacity bearing = a+b+c+d+e+f				509513.40	
			Rate per tonne capacity = (a+b+c+d+e+f)/250				2038.05	
						say	***2038.00***	
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	0.060	354.00	21.24	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			Mazdoor (Skilled)	day	0.500	442.00	221.00	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.	1.000	296823.01	296823.01	M-067
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				2968.23	
			c) GST @ 12 % on (a+b)				36041.22	
			d) Overhead charges @ 20 % on (a+b+c)				67276.94	
			e) Contractor's profit @ 10 % on (a+b+c+d)				40366.16	
			f) Cess @ 1% on (a+b+c+d+e)				4440.28	
			cost for 250 tonnes capacity bearing = a+b+c+d+e+f				448468.08	
			Rate per tonne capacity = (a+b+c+d+e+f)/250				1793.87	
						say	***1794.00***	
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.**					
			Unit: one tonne capacity Considering a 80 tonne capacity bearing for this analysis					
			a) Labour					
			Mate	day	0.060	354.00	21.24	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Material					
			PTFE sliding plate bearing assembly of 80 tonnes design load capacity duly painted complete with all its components as per drawing and Technical Specifications	each.	1.000	202389.38	202389.38	M-069
			Add 1 per cent for foundation anchorage bolts and consumables.				2023.89	
			c) GST @ 12 % on (a+b)				24595.86	
			d) Overhead charges @ 20 % on (a+b+c)				45912.27	
			e) Contractor's profit @ 10 % on (a+b+c+d)				27547.36	
			f) Cess @ 1% on (a+b+c+d+e)				3030.21	
			cost for 80 tonnes capacity bearing = a+b+c+d+e+f				306051.21	
			Rate per tonne capacity = (a+b+c+d+e+f)/80				3825.64	
						say	***3826.00***	
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	0.060	354.00	21.24	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			Mazdoor (Skilled)	day	0.500	442.00	221.00	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.	each.	1.000	16190.27	16190.27	M-066
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				161.90	
			c) GST @ 12 % on (a+b)				2028.53	
			d) Overhead charges @ 20 % on (a+b+c)				3786.59	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2271.95	
			f) Cess @ 1% on (a+b+c+d+e)				249.91	
			Cost for 19200cc of elastomeric bearing = a+b+c+d				25241.39	
			Rate per cc of elastomeric bearing = (a+b+c+d)/19200				1.31	
						say	***1.00***	
13.15	**2000 & 2200**		**Supplying, fitting and fixing in position true to line and level sliding plate bearing with stainless steel plate sliding on stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specifications.**					
			Unit: one tonne capacity					

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Considering the sliding bearing of 80 tonnes design capacity for this analysis.					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	0.750	310.00	232.50	L-13
			Mazdoor (Skilled)	day	0.350	442.00	154.70	L-15
			b) Material					
			Supply of sliding plate bearing of 80 tonne design capacity complete as per drawings and Technical Specifications.	each.	1.000	16190.27	16190.27	M-070
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				161.90	
			c) GST @ 12 % on (a+b)				2010.42	
			d) Overhead charges @ 20 % on (a+b+c)				3752.79	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2251.67	
			f) Cess @ 1% on (a+b+c+d+e)				247.68	
			Cost for 80 tonnes of capacity bearing = a+b+c+d+e+f				25016.09	
			Rate per tonne capacity = (a+b+c+d+e+f)/80				312.70	
						say	***313.00***	
13.16	**2000 & 2200**		**Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete as per drawing and approved Technical Specifications.**					
			Unit: one tonne capacity			387.20		
			Considering a Pot bearing assembly of 250 tonne capacity for this analysis.					
			a) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor	day	1.500	310.00	465.00	L-13
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15
			b) Material					
			Pot type bearing assembly consisting of a metal piston supported by a disc, PTFE pads providing sliding surfaces against stainless steel mating together with cast steel assemblies/fabricated structural steel assemblies duly painted with all components as per clause 2006 and complete as per drawings and Technical Specifications.	each.	1.000	67433.63	67433.63	M-068
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				674.34	
			c) GST @ 12 % on (a+b)				8258.67	
			d) Overhead charges @ 20 % on (a+b+c)				15416.19	
			e) Contractor's profit @ 10 % on (a+b+c+d)				9249.72	
			f) Cess @ 1% on (a+b+c+d+e)				1017.47	
			cost for 250 tonnes capacity bearing = a+b+c+d+e+f				102764.34	
			Rate per tonne capacity = (a+b+c+d+e+f)/250				411.06	
						say	***411.00***	

Chapter – 14
SUPERSTRUCTURE

Preamble:

1 The rate for the wearing coat has been analysed as under in accordance with the provisions of MORD Specifications:

a. Cement concrete wearing coat

b. Ashphaltic concrete wearing coat

c. Bitumen mastic wearing coat

The item may be selected as per approved design

2 The rates are provided for both RCC Railing and MS Railing, which can be adopted as per approved design.

3 The length of drainage spout has been provided in such a way that it is connected to the drainage system on the ground in case of flyovers and there is no splashing of water on the structure in case of bridges.

4 The rate for anti-corrosive treatment is ascertained from firms specialised in this work. In this connection Circular No. RW/NH-34041/44/91-S&R dated 21.03.2000 of Ministry of Road Transport and Highways may be referred for further details

5 Expansion joints involving movements exceeding 40 mm are specialised ready made items commercially produced by reputed firms with imported technology and parts. The rates for such joints are ascertained from the firms pre-qualified by the Ministry.

6 The Rates for pre-cast and pre-tensioned girders has also been included.

7 MoRT&H letter No. RW/NH-34059/1/96 S&R dated 30-11-2000 and subsequent corrigendum dated 25-01-2001 may be referred for detailed specifications and provisions for various types of expansion joints.

8 For bridges having wide deck/span length of more than 120 m or/and involving complex movements/rotations in different directions/planes, provision of special type of modular expansion joints such as swivel joists joint are required for which firms specialised in this field may be consulted. Such cases will require prior approval of Ministry.

Sr No	Ref. to MoRTH/D SR 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 Case I	**RCC Grade M20 Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.120	9053.98	46356.38	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.860	354.00	304.44	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**86918.000**			
			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				86918.00	
			d) Formwork and staging 20 per cent of (a+b+c)				17383.60	
			e) GST @ 12 % on (a+b+c+d)				12516.19	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				23363.56	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				14018.14	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1541.99	
			Cost for 15 cum = a+b+c+d+e+f+h				155741.48	
			Rate per cum = (a+b+c+d+e+f+h)/15				10382.77	
						say	***10383.00***	
14.1A Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				86918.00	
			d) Formwork and staging 25 per cent of (a+b+c)				21729.50	
			e) GST @ 12 % on (a+b+c+d)				13037.70	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				24337.04	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				14602.22	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1606.24	
			Cost for 15 cum = a+b+c+d+e+f+h				162230.70	
			Rate per cum = (a+b+c+d+e+f+h)/15				10815.38	
						say	***10815.00***	
14.1A Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				86918.00	
			d) Formwork and staging 30 per cent of (a+b+c)				26075.40	
			e) GST @ 12 % on (a+b+c+d)				13559.21	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				25310.52	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				15186.31	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1670.49	
			Cost for 15 cum = a+b+c+d+e+f+h				168719.93	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e+f+h)/15				11248.00	
						say	***11248.00***	
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				86918.00	
			d) Formwork and staging 25 per cent of (a+b+c)				21729.50	
			e) GST @ 12 % on (a+b+c+d)				13037.70	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				24337.04	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				14602.22	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1606.24	
			Cost for 15 cum = a+b+c+d+e+f+h				162230.70	
			Rate per cum = (a+b+c+d+e+f+h)/15				10815.38	
						say	***10815.00***	
14.1A Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				86918.00	
			d) Formwork and staging 30 per cent of (a+b+c)				26075.40	
			e) GST @ 12 % on (a+b+c+d)				13559.21	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				25310.52	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				15186.31	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1670.49	
			Cost for 15 cum = a+b+c+d+e+f+h				168719.93	
			Rate per cum = (a+b+c+d+e+f+h)/15				11248.00	
						say	***11248.00***	
14.1A Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				86918.00	
			d) Formwork and staging 35 per cent of (a+b+c)				30421.30	
			e) GST @ 12 % on (a+b+c+d)				14080.72	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				26284.00	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				15770.40	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1734.74	
			Cost for 15 cum = a+b+c+d+e+f+h				175209.16	
			Rate per cum = (a+b+c+d+e+f+h)/15				11680.61	
						say	***11681.00***	
14.1A		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	40.920	9053.98	370488.86	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader	hour	6.00	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1132.74	16991.10	P&M-049

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**672754.000**			
			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				672754.00	
			d) Formwork and staging 20 per cent of (a+b+c)				134550.80	
			e) GST @ 12 % on (a+b+c+d)				96876.58	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				180836.28	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				108501.77	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				11935.19	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1205454.62	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10045.46	
						say	***10045.00***	
14.1A Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				672754.00	
			d) Formwork and staging 25 per cent of (a+b+c)				168188.50	
			e) GST @ 12 % on (a+b+c+d)				100913.10	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				188371.12	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				113022.67	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12432.49	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1255681.88	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10464.02	
						say	***10464.00***	
14.1A Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				672754.00	
			d) Formwork and staging 30 per cent of (a+b+c)				201826.20	
			e) GST @ 12 % on (a+b+c+d)				104949.62	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				195905.96	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				117543.58	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12929.79	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1305909.15	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10882.58	
						say	***10883.00***	
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				672754.00	
			d) Formwork and staging 25 per cent of (a+b+c)				168188.50	
			e) GST @ 12 % on (a+b+c+d)				100913.10	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				188371.12	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				113022.67	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12432.49	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1255681.88	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10464.02	
						say	***10464.00***	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1A Case II (ii)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				672754.00	
			d) Formwork and staging 30 per cent of (a+b+c)				201826.20	
			e) GST @ 12 % on (a+b+c+d)				104949.62	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				195905.96	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				117543.58	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12929.79	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1305909.15	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10882.58	
						say	***10883.00***	
14.1A Case II (ii)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				672754.00	
			d) Formwork and staging 35 per cent of (a+b+c)				235463.90	
			e) GST @ 12 % on (a+b+c+d)				108986.15	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				203440.81	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				122064.49	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13427.09	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1356136.44	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11301.14	
						say	***11301.00***	
14.1		B	**RCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.990	9053.98	54233.34	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.880	354.00	311.52	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**94802.000**			
			For formwork and staging add the following:					
14.1B 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				94802.00	
			d) Formwork and staging 20 per cent of (a+b+c)				18960.40	
			e) GST @ 12 % on (a+b+c+d)				13651.49	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				25482.78	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				15289.67	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1681.86	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cost for 15 cum = a+b+c+d+e+f+g+h				169868.20	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11324.55	
						say	***11325.00***	
14.1B Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				94802.00	
			d) Formwork and staging 25 per cent of (a+b+c)				23700.50	
			e) GST @ 12 % on (a+b+c+d)				14220.30	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				26544.56	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				15926.74	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1751.94	
			Cost for 15 cum = a+b+c+d+e+f+g+h				176946.04	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11796.40	
						say	***11796.00***	
14.1B Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				94802.00	
			d) Formwork and staging 30 per cent of (a+b+c)				28440.60	
			e) GST @ 12 % on (a+b+c+d)				14789.11	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				27606.34	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16563.81	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1822.02	
			Cost for 15 cum = a+b+c+d+e+f+g+h				184023.88	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12268.26	
						say	***12268.00***	
14.1B 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				94802.00	
			d) Formwork and staging 25 per cent of (a+b+c)				23700.50	
			e) GST @ 12 % on (a+b+c+d)				14220.30	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				26544.56	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				15926.74	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1751.94	
			Cost for 15 cum = a+b+c+d+e+f+g+h				176946.04	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11796.40	
						say	***11796.00***	
14.1B Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				94802.00	
			d) Formwork and staging 30 per cent of (a+b+c)				28440.60	
			e) GST @ 12 % on (a+b+c+d)				14789.11	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				27606.34	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16563.81	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1822.02	
			Cost for 15 cum = a+b+c+d+e+f+g+h				184023.88	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12268.26	
						say	***12268.00***	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1B Case I (ii)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				94802.00	
			d) Formwork and staging 35 per cent of (a+b+c)				33180.70	
			e) GST @ 12 % on (a+b+c+d)				15357.92	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				28668.12	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				17200.87	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1892.10	
			Cost for 15 cum = a+b+c+d+e+f+g+h				191101.71	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12740.11	
						say	***12740.00***	
14.1B		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	47.950	9053.98	434138.34	M-081
			Coarse sand	cum	54.200	601.77	32615.93	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.840	354.00	297.36	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	18.000	310.00	5580.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader	hour	6.00	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**736523.000**			
			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				736523.00	
			d) Formwork and staging 20 per cent of (a+b+c)				147304.60	
			e) GST @ 12 % on (a+b+c+d)				106059.31	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				197977.38	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				118786.43	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13066.51	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1319717.23	
			Rate per cum = (a+b+c+d+e+f)/120				10997.64	
						say	***10998.00***	
14.1B Case II (i)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				736523.00	
			d) Formwork and staging 25 per cent of (a+b+c)				184130.75	
			e) GST @ 12 % on (a+b+c+d)				110478.45	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Overhead charges @ 20 % on (a+b+c+d+e)				206226.44	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				123735.86	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13610.95	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1374705.45	
			Rate per cum = (a+b+c+d+e+f)/120				11455.88	
						say	***11456.00***	
14.1B Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				736523.00	
			d) Formwork and staging 30 per cent of (a+b+c)				220956.90	
			e) GST @ 12 % on (a+b+c+d)				114897.59	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				214475.50	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				128685.30	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14155.38	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1429693.67	
			Rate per cum = (a+b+c+d+e+f)/120				11914.11	
						say	***11914.00***	
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				736523.00	
			d) Formwork and staging 25 per cent of (a+b+c)				184130.75	
			e) GST @ 12 % on (a+b+c+d)				110478.45	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				206226.44	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				123735.86	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13610.95	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1374705.45	
			Rate per cum = (a+b+c+d+e+f)/120				11455.88	
						say	***11456.00***	
14.1B Case II (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				736523.00	
			d) Formwork and staging 30 per cent of (a+b+c)				220956.90	
			e) GST @ 12 % on (a+b+c+d)				114897.59	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				214475.50	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				128685.30	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14155.38	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1429693.67	
			Rate per cum = (a+b+c+d+e+f)/120				11914.11	
						say	***11914.00***	
14.1B Case II (ii)		**(r)**	**Height above 10m**					
			d) Formwork and staging 35 per cent of (a+b+c)				257783.05	
			e) GST @ 12 % on (a+b+c+d)				119316.73	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				222724.56	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				133634.73	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14699.82	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1484681.89	
			Rate per cum = (a+b+c+d+e+f)/120				12372.35	
						say	***12372.00***	
14.1		**C**	**RCC Grade M 30**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.100	9053.98	55229.28	M-081

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	21.000	310.00	6510.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**96115.000**			
			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				96115.00	
			d) Formwork and staging 20 per cent of (a+b+c)				19223.00	
			e) GST @ 12 % on (a+b+c+d)				13840.56	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				25835.71	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				15501.43	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1705.16	
			Cost for 15 cum = a+b+c+d+e+f+g+h				172220.86	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11481.39	
						say	***11481.00***	
14.1C Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				96115.00	
			d) Formwork and staging 25 per cent of (a+b+c)				24028.75	
			e) GST @ 12 % on (a+b+c+d)				14417.25	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				26912.20	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16147.32	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1776.21	
			Cost for 15 cum = a+b+c+d+e+f+g+h				179396.73	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11959.78	
						say	***11960.00***	
14.1C Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				96115.00	
			d) Formwork and staging 30 per cent of (a+b+c)				28834.50	
			e) GST @ 12 % on (a+b+c+d)				14993.94	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				27988.69	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16793.21	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1847.25	
			Cost for 15 cum = a+b+c+d+e+f+g+h				186572.59	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12438.17	
						say	***12438.00***	
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				96115.00	
			d) Formwork and staging 25 per cent of (a+b+c)				24028.75	
			e) GST @ 12 % on (a+b+c+d)				14417.25	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			f) Overhead charges @ 20 % on (a+b+c+d+e)				26912.20	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16147.32	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1776.21	
			Cost for 15 cum = a+b+c+d+e+f+g+h				179396.73	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11959.78	
						say	***11960.00***	
14.1C Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				96115.00	
			d) Formwork and staging 30 per cent of (a+b+c)				28834.50	
			e) GST @ 12 % on (a+b+c+d)				14993.94	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				27988.69	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16793.21	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1847.25	
			Cost for 15 cum = a+b+c+d+e+f+g+h				186572.59	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12438.17	
						say	***12438.00***	
14.1C Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				96115.00	
			d) Formwork and staging 35 per cent of (a+b+c)				33640.25	
			e) GST @ 12 % on (a+b+c+d)				15570.63	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				29065.18	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				17439.11	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1918.30	
			Cost for 15 cum = a+b+c+d+e+f+g+h				193748.47	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12916.56	
						say	***12917.00***	
14.1C		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump.**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.790	9053.98	441743.68	M-081
			Coarse sand	cum	54.600	601.77	32856.64	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.880	354.00	311.52	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	19.000	310.00	5890.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader	hour	6.00	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**744694.000**			
			For formwork and staging add the following:					
14.1C Case II		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				744694.00	
			d) Formwork and staging 20 per cent of (a+b+c)				148938.80	
			e) GST @ 12 % on (a+b+c+d)				107235.94	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				200173.75	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				120104.25	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13211.47	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1334358.21	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11119.65	
						say	***11120.00***	
14.1C Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				744694.00	
			d) Formwork and staging 25 per cent of (a+b+c)				186173.50	
			e) GST @ 12 % on (a+b+c+d)				111704.10	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				208514.32	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				125108.59	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13761.95	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1389956.46	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11582.97	
						say	***11583.00***	
14.1C Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				744694.00	
			d) Formwork and staging 30 per cent of (a+b+c)				223408.20	
			e) GST @ 12 % on (a+b+c+d)				116172.26	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				216854.89	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				130112.94	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14312.42	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1445554.71	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12046.29	
						say	***12046.00***	
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				744694.00	
			d) Formwork and staging 25 per cent of (a+b+c)				186173.50	
			e) GST @ 12 % on (a+b+c+d)				111704.10	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				208514.32	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				125108.59	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13761.95	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1389956.46	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11582.97	
						say	***11583.00***	
14.1C Case II (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				744694.00	
			d) Formwork and staging 30 per cent of (a+b+c)				223408.20	
			e) GST @ 12 % on (a+b+c+d)				116172.26	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				216854.89	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				130112.94	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14312.42	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cost for 120 cum = a+b+c+d+e+f+g+h				1445554.71	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12046.29	
						say	***12046.00***	
14.1C Case II (ii)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				744694.00	
			d) Formwork and staging 35 per cent of (a+b+c)				260642.90	
			e) GST @ 12 % on (a+b+c+d)				120640.43	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				225195.47	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				135117.28	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14862.90	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1501152.98	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12509.61	
						say	***12510.00***	
14.1		**D**	**RCC/PSC Grade M35**					
		Case I	**Using Concrete Mixer.**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.330	9053.98	57311.69	M-081
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			b) Labour					
			Mate	day	0.900	354.00	318.60	L-12
			Mason	day	1.500	442.00	663.00	L-11
			Mazdoor	day	21.000	310.00	6510.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**98197.000**			
			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				98197.00	
			d) Formwork and staging 18 per cent of (a+b+c)				17675.46	
			e) GST @ 12 % on (a+b+c+d)				13904.70	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				25955.43	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				15573.26	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1713.06	
			Cost for 15 cum = a+b+c+d+e+f+g+h				173018.91	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11534.59	
						say	***11535.00***	
14.1D Case I (i)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98197.00	
			d) Formwork and staging 23 per cent of (a+b+c)				22585.31	
			e) GST @ 12 % on (a+b+c+d)				14493.88	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				27055.24	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16233.14	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1785.65	
			Cost for 15 cum = a+b+c+d+e+f+g+h				180350.22	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12023.35	
						say	***12023.00***	
14.1D Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98197.00	
			d) Formwork and staging 28 per cent of (a+b+c)				27495.16	
			e) GST @ 12 % on (a+b+c+d)				15083.06	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				28155.04	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16893.03	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1858.23	
			Cost for 15 cum = a+b+c+d+e+f+g+h				187681.52	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12512.10	
						say	***12512.00***	
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				98197.00	
			d) Formwork and staging 23 per cent of (a+b+c)				22585.31	
			e) GST @ 12 % on (a+b+c+d)				14493.88	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				27055.24	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16233.14	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1785.65	
			Cost for 15 cum = a+b+c+d+e+f+g+h				180350.22	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12023.35	
						say	***12023.00***	
14.1D Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98197.00	
			d) Formwork and staging 28 per cent of (a+b+c)				27495.16	
			e) GST @ 12 % on (a+b+c+d)				15083.06	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				28155.04	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16893.03	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1858.23	
			Cost for 15 cum = a+b+c+d+e+f+g+h				187681.52	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12512.10	
						say	***12512.00***	
14.1D Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98197.00	
			d) Formwork and staging 33 per cent of (a+b+c)				32405.01	
			e) GST @ 12 % on (a+b+c+d)				15672.24	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				29254.85	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				17552.91	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1930.82	
			Cost for 15 cum = a+b+c+d+e+f+g+h				195012.83	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				13000.86	
						say	***13001.00***	
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				98197.00	
			d) Formwork and staging 38 per cent of (a+b+c)				37314.86	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST @ 12 % on (a+b+c+d)				16261.42	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				30354.66	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				18212.79	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				2003.41	
			Cost for 15 cum = a+b+c+d+e+f+g+h				202344.14	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				13489.61	
						say	***13490.00***	
14.1D Case I (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98197.00	
			d) Formwork and staging 48 per cent of (a+b+c)				47134.56	
			e) GST @ 12 % on (a+b+c+d)				17439.79	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				32554.27	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				19532.56	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				2148.58	
			Cost for 15 cum = a+b+c+d+e+f+g+h				217006.76	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				14467.12	
						say	***14467.00***	
14.1D Case I (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98197.00	
			d) Formwork and staging 58 per cent of (a+b+c)				56954.26	
			e) GST @ 12 % on (a+b+c+d)				18618.15	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				34753.88	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				20852.33	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				2293.76	
			Cost for 15 cum = a+b+c+d+e+f+g+h				231669.38	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				15444.63	
						say	***15445.00***	
		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.640	9053.98	458493.55	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			b) Labour					
			Mate	day	0.880	354.00	311.52	L-12
			Mason	day	3.000	442.00	1326.00	L-11
			Mazdoor	day	19.000	310.00	5890.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader	hour	6.00	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**761083.000**			
			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**					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761083.00	
			d) Formwork and staging 18 per cent of (a+b+c)				136994.94	
			e) GST @ 12 % on (a+b+c+d)				107769.35	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				201169.46	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				120701.68	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13277.18	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1340995.61	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11174.96	
						say	***11175.00***	
14.1D Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761083.00	
			d) Formwork and staging 23 per cent of (a+b+c)				175049.09	
			e) GST @ 12 % on (a+b+c+d)				112335.85	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				209693.59	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				125816.15	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13839.78	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1397817.46	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11648.48	
						say	***11648.00***	
14.1D Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761083.00	
			d) Formwork and staging 28 per cent of (a+b+c)				213103.24	
			e) GST @ 12 % on (a+b+c+d)				116902.35	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				218217.72	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				130930.63	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14402.37	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1454639.31	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12121.99	
						say	***12122.00***	
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				761083.00	
			d) Formwork and staging 23 per cent of (a+b+c)				175049.09	
			e) GST @ 12 % on (a+b+c+d)				112335.85	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				209693.59	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				125816.15	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13839.78	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1397817.46	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11648.48	
						say	***11648.00***	
14.1D Case II (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761083.00	
			d) Formwork and staging 28 per cent of (a+b+c)				213103.24	
			e) GST @ 12 % on (a+b+c+d)				116902.35	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				218217.72	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				130930.63	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14402.37	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Cost for 120 cum = a+b+c+d+e+f+g+h				1454639.31	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12121.99	
						say	***12122.00***	
14.1D Case II (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761083.00	
			d) Formwork and staging 33 per cent of (a+b+c)				251157.39	
			e) GST @ 12 % on (a+b+c+d)				121468.85	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				226741.85	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				136045.11	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14964.96	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1511461.16	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12595.51	
						say	***12596.00***	
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				761083.00	
			d) Formwork and staging 38 per cent of (a+b+c)				289211.54	
			e) GST @ 12 % on (a+b+c+d)				126035.34	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				235265.98	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				141159.59	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				15527.55	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1568283.00	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				13069.03	
						say	***13069.00***	
14.1D Case II (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761083.00	
			d) Formwork and staging 48 per cent of (a+b+c)				365319.84	
			e) GST @ 12 % on (a+b+c+d)				135168.34	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				252314.24	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				151388.54	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				16652.74	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1681926.70	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				14016.06	
						say	***14016.00***	
14.1D Case II (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761083.00	
			d) Formwork and staging 58 per cent of (a+b+c)				441428.14	
			e) GST @ 12 % on (a+b+c+d)				144301.34	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				269362.50	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				161617.50	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				17777.92	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1795570.40	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				14963.09	
						say	***14963.00***	
14.1		**E**	**PSC Grade M-40**					
		Case 1	**Using concrete mixer.**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.450	9053.98	58398.17	M-081

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Coarse sand	cum	6.750	601.77	4061.95	M-005
			20 mm Aggregate	cum	8.100	1784.07	14450.97	M-053
			10 mm Aggregate	cum	5.400	1951.33	10537.18	M-051
			Admixture @ 0.4 per cent of cement	kg	25.800	61.06	1575.35	M-180
			b) Labour					
			Mate	day	0.960	354.00	339.84	L-12
			Mason	day	2.000	442.00	884.00	L-11
			Mazdoor	day	22.000	310.00	6820.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	269.91	1619.46	P&M-009
			Generator 33 KVA	hour	6.000	453.98	2723.88	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**101411.000**			
			For formwork and staging add the following:					
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				101411.00	
			d) Formwork and staging 20 per cent of (a+b+c)				20282.20	
			e) GST @ 12 % on (a+b+c+d)				14603.18	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				27259.28	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				16355.57	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1799.11	
			Cost for 15 cum = a+b+c+d+e+f+g+h				181710.34	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12114.02	
						say	***12114.00***	
14.1E Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				101411.00	
			d) Formwork and staging 25 per cent of (a+b+c)				25352.75	
			e) GST @ 12 % on (a+b+c+d)				15211.65	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				28395.08	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				17037.05	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1874.08	
			Cost for 15 cum = a+b+c+d+e+f+g+h				189281.61	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12618.77	
						say	***12619.00***	
14.1E Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				101411.00	
			d) Formwork and staging 30 per cent of (a+b+c)				30423.30	
			e) GST @ 12 % on (a+b+c+d)				15820.12	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				29530.88	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				17718.53	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1949.04	
			Cost for 15 cum = a+b+c+d+e+f+g+h				196852.87	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				13123.52	
						say	***13124.00***	
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				101411.00	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Formwork and staging 25 per cent of (a+b+c)				25352.75	
			e) GST @ 12 % on (a+b+c+d)				15211.65	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				28395.08	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				17037.05	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1874.08	
			Cost for 15 cum = a+b+c+d+e+f+g+h				189281.61	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				12618.77	
						say	***12619.00***	
14.1E Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				101411.00	
			d) Formwork and staging 30 per cent of (a+b+c)				30423.30	
			e) GST @ 12 % on (a+b+c+d)				15820.12	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				29530.88	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				17718.53	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1949.04	
			Cost for 15 cum = a+b+c+d+e+f+g+h				196852.87	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				13123.52	
						say	***13124.00***	
14.1E Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				101411.00	
			d) Formwork and staging 35 per cent of (a+b+c)				35493.85	
			e) GST @ 12 % on (a+b+c+d)				16428.58	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				30666.69	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				18400.01	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				2024.00	
			Cost for 15 cum = a+b+c+d+e+f+g+h				204424.13	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				13628.28	
						say	***13628.00***	
14.1E		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	51.600	9053.98	467185.37	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture @ 0.4 per cent of cement	kg	206.400	61.06	12602.78	M-180
			b) Labour					
			Mate	day	0.940	354.00	332.76	L-12
			Mason	day	3.500	442.00	1547.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader	hour	6.00	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**782929.000**			

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			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				782929.00	
			d) Formwork and staging 18 per cent of (a+b+c)				140927.22	
			e) GST @ 12 % on (a+b+c+d)				110862.75	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				206943.79	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				124166.28	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13658.29	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1379487.33	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11495.73	
						say	***11496.00***	
14.1E Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				782929.00	
			d) Formwork and staging 23 per cent of (a+b+c)				180073.67	
			e) GST @ 12 % on (a+b+c+d)				115560.32	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				215712.60	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				129427.56	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14237.03	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1437940.18	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11982.83	
						say	***11983.00***	
14.1E Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				782929.00	
			d) Formwork and staging 28 per cent of (a+b+c)				219220.12	
			e) GST @ 12 % on (a+b+c+d)				120257.89	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				224481.40	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				134688.84	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14815.77	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1496393.02	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12469.94	
						say	***12470.00***	
14.1E 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				782929.00	
			d) Formwork and staging 23 per cent of (a+b+c)				180073.67	
			e) GST @ 12 % on (a+b+c+d)				115560.32	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				215712.60	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				129427.56	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14237.03	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1437940.18	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11982.83	
						say	***11983.00***	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1E Case II (ii)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				782929.00	
			d) Formwork and staging 28 per cent of (a+b+c)				219220.12	
			e) GST @ 12 % on (a+b+c+d)				120257.89	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				224481.40	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				134688.84	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14815.77	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1496393.02	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12469.94	
						say	***12470.00***	
14.1E Case II (ii)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				782929.00	
			d) Formwork and staging 33 per cent of (a+b+c)				258366.57	
			e) GST @ 12 % on (a+b+c+d)				124955.47	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				233250.21	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				139950.13	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				15394.51	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1554845.89	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12957.05	
						say	***12957.00***	
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				782929.00	
			d) Formwork and staging 38 per cent of (a+b+c)				297513.02	
			e) GST @ 12 % on (a+b+c+d)				129653.04	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				242019.01	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				145211.41	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				15973.25	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1613298.73	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				13444.16	
						say	***13444.00***	
14.1E Case II (iii)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				782929.00	
			d) Formwork and staging 48 per cent of (a+b+c)				375805.92	
			e) GST @ 12 % on (a+b+c+d)				139048.19	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				259556.62	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				155733.97	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				17130.74	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1730204.44	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				14418.37	
						say	***14418.00***	
14.1E Case II (iii)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				782929.00	
			d) Formwork and staging 58 per cent of (a+b+c)				454098.82	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST @ 12 % on (a+b+c+d)				148443.34	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				277094.23	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				166256.54	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				18288.22	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1847110.15	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				15392.58	
						say	***15393.00***	
14.1F		**F**	**PSC Grade M-45**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	55.800	9053.98	505212.08	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture @ 0.4 per cent of cement	kg	223.200	61.06	13628.59	M-180
			b) Labour					
			Mate	day	0.940	354.00	332.76	L-12
			Mason	day	3.500	442.00	1547.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader	hour	6.00	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**821982.000**			
			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				821982.00	
			d) Formwork and staging 16 per cent of (a+b+c)				131517.12	
			e) GST @ 12 % on (a+b+c+d)				114419.89	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				213583.80	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				128150.28	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14096.53	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1423749.62	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11864.58	
						say	***11865.00***	
14.1F (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				821982.00	
			d) Formwork and staging 21 per cent of (a+b+c)				172616.22	
			e) GST @ 12 % on (a+b+c+d)				119351.79	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				222790.00	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				133674.00	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14704.14	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1485118.15	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12375.98	
						say	***12376.00***	

Sr No	Ref. to MoRTH/D SR 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				821982.00	
			d) Formwork and staging 26 per cent of (a+b+c)				213715.32	
			e) GST @ 12 % on (a+b+c+d)				124283.68	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				231996.20	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				139197.72	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				15311.75	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1546486.67	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12887.39	
						say	***12887.00***	
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				821982.00	
			d) Formwork and staging 21 per cent of (a+b+c)				172616.22	
			e) GST @ 12 % on (a+b+c+d)				119351.79	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				222790.00	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				133674.00	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				14704.14	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1485118.15	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12375.98	
						say	***12376.00***	
14.1F (ii)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				821982.00	
			d) Formwork and staging 26 per cent of (a+b+c)				213715.32	
			e) GST @ 12 % on (a+b+c+d)				124283.68	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				231996.20	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				139197.72	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				15311.75	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1546486.67	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				12887.39	
						say	***12887.00***	
14.1F (ii)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				821982.00	
			d) Formwork and staging 31 per cent of (a+b+c)				254814.42	
			e) GST @ 12 % on (a+b+c+d)				129215.57	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				241202.40	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				144721.44	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				15919.36	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1607855.19	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				13398.79	
						say	***13399.00***	
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				821982.00	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Formwork and staging 36 per cent of (a+b+c)				295913.52	
			e) GST @ 12 % on (a+b+c+d)				134147.46	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				250408.60	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				150245.16	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				16526.97	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1669223.71	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				13910.20	
						say	***13910.00***	
14.1F (iii)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				821982.00	
			d) Formwork and staging 46 per cent of (a+b+c)				378111.72	
			e) GST @ 12 % on (a+b+c+d)				144011.25	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				268820.99	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				161292.60	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				17742.19	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1791960.75	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				14933.01	
						say	***14933.00***	
14.1F (iii)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				821982.00	
			d) Formwork and staging 56 per cent of (a+b+c)				460309.92	
			e) GST @ 12 % on (a+b+c+d)				153875.03	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				287233.39	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				172340.03	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				18957.40	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1914697.77	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				15955.81	
						say	***15956.00***	
14.1		**G**	**PSC Grade M-50**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	58.800	9053.98	532374.02	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture @ 0.4 per cent of cement	kg	235.200	61.06	14361.31	M-180
			b) Labour					
			Mate	day	0.940	354.00	332.76	L-12
			Mason	day	3.500	442.00	1547.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader	hour	6.00	1398.23	8389.38	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**849877.000**			

Sr No	Ref. to MoRTH/D SR 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				849877.00	
			d) Formwork and staging 35 per cent of (a+b+c)				297456.95	
			e) GST @ 12 % on (a+b+c+d)				137680.07	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				257002.80	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				154201.68	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				16962.19	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1713180.69	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				14276.51	
						say	***14277.00***	
14.1G (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				849877.00	
			d) Formwork and staging 45 per cent of (a+b+c)				382444.65	
			e) GST @ 12 % on (a+b+c+d)				147878.60	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				276040.05	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				165624.03	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				18218.64	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1840082.97	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				15334.02	
						say	***15334.00***	
14.1G (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				849877.00	
			d) Formwork and staging 55 per cent of (a+b+c)				467432.35	
			e) GST @ 12 % on (a+b+c+d)				158077.12	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				295077.29	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				177046.38	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				19475.10	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1966985.24	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				16391.54	
						say	***16392.00***	
14.1		**H**	**PSC Grade M- 55**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	63.500	9053.98	574927.73	M-081
			Coarse sand	cum	54.000	601.77	32495.58	M-004
			20 mm Aggregate	cum	64.800	1784.07	115607.74	M-053
			10 mm Aggregate	cum	43.200	1951.33	84297.46	M-051
			Admixture @ 0.4 per cent of cement	kg	254.000	61.06	15509.24	M-180
			b) Labour					
			Mate	day	0.940	354.00	332.76	L-12
			Mason	day	3.500	442.00	1547.00	L-11
			Mazdoor	day	20.000	310.00	6200.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2787.61	16725.66	P&M-002
			Generator 100 KVA	hour	6.00	849.56	5097.36	P&M-080
			Loader	hour	6.00	1398.23	8389.38	P&M-017

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1132.74	16991.10	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	18.94	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	6.00	2576.11	15456.66	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**893578.000**			
			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				893578.00	
			d) Formwork and staging 35 per cent of (a+b+c)				312752.30	
			e) GST @ 12 % on (a+b+c+d)				144759.64	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				270217.99	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				162130.79	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				17834.39	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1801273.11	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				15010.61	
						say	***15011.00***	
14.1H (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				893578.00	
			d) Formwork and staging 45 per cent of (a+b+c)				402110.10	
			e) GST @ 12 % on (a+b+c+d)				155482.57	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				290234.13	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				174140.48	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				19155.45	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1934700.73	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				16122.51	
						say	***16123.00***	
14.1H (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				893578.00	
			d) Formwork and staging 55 per cent of (a+b+c)				491467.90	
			e) GST @ 12 % on (a+b+c+d)				166205.51	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				310250.28	
			g) Contractor's profit @ 10 % on (a+b+c+d+f)				186150.17	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				20476.52	
			Cost for 120 cum = a+b+c+d+e+f+g+h				2068128.38	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				17234.40	
						say	***17234.00***	
		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.					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			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	1.050	59823.01	62814.16	M-082
			Binding wire	Kg	8.000	89.38	715.04	M-072
			b) Labour for cutting, bending, tying and placing in position					
			Mate	day	0.440	354.00	155.76	L-12
			Blacksmith	day	3.000	442.00	1326.00	L-02
			Mazdoor	day	8.000	310.00	2480.00	L-13
			Basic Cost of Labour & Material (a+b)		**67491.000**			
			c) GST @ 12 % on (a+b)				8098.92	
			d) Overhead charges @ 20 % on (a+b+c)				15117.98	
			e) Contractor's profit @ 10 % on (a+b+c+d)				9070.79	
			f) Cess @ 1% on (a+b+c+d+e)				997.79	
			Rate per MT = a+b+c+d+e+f				100776.44	
						say	***100776.00***	
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	0.390	71139.82	27744.53	M-119
			Sheathing duct ID 66 mm along with 5 per cent extra length 40 x 1.05 = 42 m.	metre	42.000	110.62	4646.04	M-165
			Tube anchorage set complete with bearing plate, permanent wedges etc	each	2.000	4661.06	9322.12	M-187
			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	0.130	9053.98	1177.02	M-081
			Add 0.50 per cent cost of material for Spacers, Insulation tape and miscellaneous items				2144.49	
			b) Labour					
			i) For making and fixing cables, anchorages					
			Mate	day	0.160	354.00	56.64	L-12
			Blacksmith	day	1.000	442.00	442.00	L-02
			Mazdoor	day	3.000	310.00	930.00	L-13

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			ii) For prestressing					
			Mate/Supervisor	day	0.050	354.00	17.70	L-12
			Prestressing operator / Fitter	day	0.250	442.00	110.50	L-08
			Mazdoor	day	1.000	310.00	310.00	L-13
			iii) For grouting					
			Mate/Supervisor	day	0.050	354.00	17.70	L-12
			Mason	day	0.250	442.00	110.50	L-11
			Mazdoor	day	1.000	310.00	310.00	L-13
			c) Machinery					
			Stressing jack with pump	hour	2.500	157.52	393.80	P&M-040
			Grouting pump with agitator	hour	1.000	184.07	184.07	M-111
			Generator 33 KVA.	hour	3.500	453.98	1588.93	P&M-079
			d) GST @ 12 % on (a+b+c)				5940.72	
			e) Overhead charges @ 20 % on (a+b+c+d)				11089.35	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				6653.61	
			g) Cess @ 1% on (a+b+c+d+e+f)				731.90	
			Cost for 0.377 MT (a+b+c+d+e+f+g)				73921.62	
			Rate per MT = (a+b+c+d+e+f+g)/0.377				196078.57	
						say	***196079.00***	
		Note	Cost of HT steel has been taken for delivery at site. Hence carriage has not been considered.					
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 and excluding GST, OH, CP & Cess)	cum	1.000	6206.00	6206.00	Item 14.1(C)
			HYSD bar reinforcement Rate as per item No 14.2(Excluding formwork and excluding GST, OH, CP & Cess)	tonne	0.080	67488.00	5399.04	Item 14.2 A
			b) Labour					
			Mazdoor for cleaning deck slab concrete surface.	day	0.150	310.00	46.50	L-13
			c) GST @ 12 % on (a+b)				1398.18	
			d) Overhead charges @ 20 % on (a+b+c)				2609.94	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1565.97	
			f) Cess @ 1% on (a+b+c+d+e)				172.26	
			Rate per cum (a+b+c+d+e+f)				17397.89	
						say	***17398.00***	
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.					
			Unit = sqm					
			Taking output = 72.46 sqm (2 tonnes)(0.869 cum) assuming a density of 2.3 tonnes/cum.					
			a) Labour					
			Mate	day	0.490	354.00	173.46	L-12

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	11.000	310.00	3410.00	L-13
			Mazdoor (Skilled)	day	1.250	442.00	552.50	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	0.060	433.63	26.02	P&M-031
			Air compressor 250 cfm	hour	0.060	575.22	34.51	P&M-001
			Mastic cooker 1 tonne capacity	hour	6.000	104.42	626.52	P&M-030
			Bitumen boiler 1500 litres capacity	hour	6.000	241.59	1449.54	P&M-005
			Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	476.11	476.11	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 for a specific case)					
			i) Bitumen 80/100 or 60/70 or 30/40 @ 10.2 per cent by weight of mix. 2 x 10.2/100 = 0.204	tonne	0.200	57350.44	11470.09	M-074
			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	0.390	624.78	243.66	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	0.360	12878.76	4636.35	M-188
			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	0.550	1951.33	1073.23	M-051
			v) Pre-coated stone chips of 9.5 mm nominal size for skid resistance = 72.46x0.005/10 = 0.036	cum	0.040	2007.08	80.28	M-142
			vi) Bitumen for coating of chips @ 2 per cent by weight = 0.036 x 1.456 x 2/100 = 0.001048MT = 1.05kg	kg	1.050	57.35	60.22	M-074/1000
			d) GST @ 12 % on (a+b+c)				2917.50	
			e) Overhead charges @ 20 % on (a+b+c+d)				5446.00	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				3267.60	
			g) Cess @ 1% on (a+b+c+d+e+f)				359.44	
			Cost for 72.46 sqm = a+b+c+d+e+f+g				36303.03	
			Rate per sqm = (a+b+c+d+e+f+g)/72.46				501.01	
						say	***501.00***	

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.

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			4.This rate analysis is based on design made 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					
			Cement concreteM30 Grade Refer relevant item of concrete in Item 14.1(C) by using batching plant, excluding formwork i.e. per cum basic cost (a+b+c) (Excluding formwork and excluding GST, OH, CP & Cess) 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).	cum	4.090	6206.00	25382.54	Item 14.1(C)
			Add 5 per cent of above cost for form work for casting in casting yard.				1269.13	
			HYSD bar reinforcement Rate as per item No 14.2(Excluding formwork and excluding GST, OH, CP & Cess) Refer MoRTH SD / 202.	tonne	0.870	67488.00	58714.56	Item 14.2 A
			Add 5 per cent of (a) for handling and fixing of precast panels in position				4268.31	
			b) GST @ 12 % on (a)				10756.14	
			c) Overhead charges @ 20 % on (a+b)				20078.14	
			d) Contractor's profit @ 10 % on (a+b+c)				12046.88	
			e) Cess @ 1% on (a+b+c+d)				1325.16	
			Rate for 48 m (a+b+c+d+e)				133840.86	
			Rate per metre (a+b+c+d+e)/48				2788.35	
						say	***2788.00***	
		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.					
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					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Taking output = 2 x 24 m span = 48 m.					
			a) Material					
			Cement concreteM30 Grade Refer relevant item of concrete in Item 14.1(C) by using batching plant, excluding formwork i.e. per cum basic cost (a+b+c) (Excluding formwork and excluding GST, OH, CP & Cess)	cum	4.090	6206.00	25382.54	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.				3045.90	
			HYSD bar reinforcement Rate as per item No 14.2(Excluding formwork and excluding GST, OH, CP & Cess)	tonne	0.870	67488.00	58714.56	Item 14.2 A
			refer MoRTH SD / 202.					
			b) GST @ 12 % on (a)				10457.16	
			c) Overhead charges @ 20 % on (a+b)				19520.03	
			d) Contractor's profit @ 10 % on (a+b+c)				11712.02	
			e) Cess @ 1% on (a+b+c+d)				1288.32	
			Rate for 48 m (a+b+c+d+e)				130120.53	
			Rate per metre (a+b+c+d+e)/48				2710.84	
						say	***2711.00***	
		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.					
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	2.950	48312.00	142520.40	M-179
			2) MS Flat = 0.964 x 1.05 = 1.012 MT	tonne	1.010	48312.00	48795.12	M-179
			3) MS bars = 0.17 x 1.05 = 0.180 MT	tonne	0.180	48312.00	8696.16	M-179
			4) MS bolts, nuts and washers	tonne	0.150	111500.00	16725.00	M-130*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.				10836.83	
			Add for cost of concrete for fixing vertical posts in the performed recess @ 1 per cent of cost of material.				2167.37	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add for electricity charges, welding and drilling equipment, electrodes and other consumables @ 1 per cent of cost of material.				2167.37	
			b) Labour					
			Mate	day	2.800	354.00	991.20	L-12
			Mazdoor (Skilled)	day	30.000	442.00	13260.00	L-15
			Mazdoor	day	40.000	310.00	12400.00	L-13
			c) GST @ 12 % on (a+b)				31027.13	
			d) Overhead charges @ 20 % on (a+b+c)				57917.32	
			e) Contractor's profit @ 10 % on (a+b+c+d)				34750.39	
			f) Cess @ 1% on (a+b+c+d+e)				3822.54	
			Cost for 100 m steel railing = a+b+c+d+e+f				386076.83	
			Rate per metre (a+b+c+d+e+f)/100				3860.77	
						say	***3861.00***	
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	4.000	68.02	272.08	M-087/1000
			GI pipe 100mm dia	metre	6.000	34.51	207.06	M-056
			GI bolt 10 mm Dia	each	6.000	42.48	254.88	M-110
			Galvanised MS flat clamp	each	2.000	37.17	74.34	M-101
			b) Labour					
			For fabrication					
			Mate	day	0.020	354.00	7.08	L-12
			Skilled (Blacksmith, welder etc.)	day	0.020	442.00	8.84	L-02
			Mazdoor	day	0.020	310.00	6.20	L-13
			For fixing in position					
			Mate	day	0.010	354.00	3.54	L-12
			Mason	day	0.010	442.00	4.42	L-11
			Mazdoor	day	0.200	310.00	62.00	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.				45.02	
			c) GST @ 12 % on (a+b)				113.46	
			d) Overhead charges @ 20 % on (a+b+c)				211.78	
			e) Contractor's profit @ 10 % on (a+b+c+d)				127.07	
			f) Cess @ 1% on (a+b+c+d+e)				13.98	
			Rate per metre (a+b+c+d+e+f)				1411.75	
						say	***1412.00***	
		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 (Including GST, OH, CP & Cess)	cum	1.000	7573.00	7573.00	Item 12.8 (A)
			Rate per cum			***say***	***7573.00***	

Sr No	Ref. to MoRTH/D SR 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 GST, OH, CP & Cess)	cum	1.000	6201.00	6201.00	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.				124.02	
			HYSD bar reinforcement Rate as per item No 14.2(Excluding GST, OH, CP & Cess)	tonne	0.050	67488.00	3374.40	Item 14.2 A
			b) GST @ 12 % on (a)				1163.93	
			c) Overhead charges @ 20 % on (a+b)				2172.67	
			d) Contractor's profit @ 10 % on (a+b+c)				1303.60	
			e) Cess @ 1% on (a+b+c+d)				143.40	
			Rate per cum (a+b+c+d+e)				14483.02	
						say	***14483.00***	
		Note	The grade of reinforced cement concrete may be adopted as M30 for severe conditions and M25 for moderate conditions.					
14.15	**800**		**Crash Barriers** The rate analysis for rigid crash barrier in reinforced cement concrete, semi-rigid crash barrier with metal beam and flexible crash barrier with wire ropes have been made and included in chapter-8 on Traffic and Transportation.					
14.16	**800**		**Painting on concrete surface**					
			Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 sqm.					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Painter	day	0.250	442.00	110.50	L-18
			Mazdoor (Skilled)	day	0.250	442.00	110.50	L-15
			b) Material					
			Water based paint of approved quality for cement concrete surface	Litres	5.000	85.84	429.20	M-190
			c) GST @ 12 % on (a+b)				78.45	
			d) Overhead charges @ 20 % on (a+b+c)				146.44	
			e) Contractor's profit @ 10 % on (a+b+c+d)				87.86	
			f) Cess @ 1% on (a+b+c+d+e)				9.66	
			Cost for 10 sqm (a+b+c+d+e+f)				976.15	
			Rate per sqm (a+b+c+d+e+f)/10				97.62	
						say	***98.00***	
14.17	**2604**		**Burried Joint**					
			Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised weldable 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.					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.020	354.00	7.08	L-12
			Mazdoor	day	0.400	310.00	124.00	L-13
			Mazdoor (Skilled)	day	0.200	442.00	88.40	L-15
			b) Material					
			Galvanised M.S plate 200 mm wide,12 mm thick @ 94.20 kg/sqm including 5 per cent wastage	kg	237.500	60.14	14283.25	M-060/1000
			Add 1 per cent of cost of steel plate cutting, welding consumables and galvanised				142.83	
			c) GST @ 12 % on (a+b)				1757.47	
			d) Overhead charges @ 20 % on (a+b+c)				3280.61	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1968.36	
			f) Cess @ 1% on (a+b+c+d+e)				216.52	
			Cost for 12 m = (a+b+c+d+e+f)				21868.52	
			Rate per m = (a+b+c+d+e+f)/12				1822.38	
						say	***1822.00***	
		Note	Guidelines laid down vide the MoRTH circular No. RW/NH-34059/1/96-S&R dated 30.11.2000 and subsequent corrigendum dated 25.01.2001 may be reffered for expansion joints.					
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	0.040	354.00	14.16	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15
			b) Material					
			Copper plate - 12m long x 250 mm wide	kg	55.000	736.28	40495.40	M-086
			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) GST @ 12 % on (a+b)				4906.27	
			d) Overhead charges @ 20 % on (a+b+c)				9158.37	
			e) Contractor's profit @ 10 % on (a+b+c+d)				5495.02	
			f) Cess @ 1% on (a+b+c+d+e)				604.45	
			Cost for 12 m = (a+b+c+d+e+f)				61049.67	
			Rate per m = (a+b+c+d+e+f)/12				5087.47	
						say	***5087.00***	
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	0.010	354.00	3.54	L-12
			Mazdoor	day	0.100	310.00	31.00	L-13
			Mazdoor (Skilled)	day	0.100	442.00	44.20	L-15
			b) Material					
			20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	3.000	760.18	2280.54	M-084

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Area = 12 x 0.25 = 3 sqm					
			c) GST @ 12 % on (a+b)				283.11	
			d) Overhead charges @ 20 % on (a+b+c)				528.48	
			e) Contractor's profit @ 10 % on (a+b+c+d)				317.09	
			f) Cess @ 1% on (a+b+c+d+e)				34.88	
			Cost for 12 m = (a+b+c+d+e+f)				3522.84	
			Rate per m = (a+b+c+d+e+f)/12				293.57	
						say	***294.00***	
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	0.010	354.00	3.54	L-12
			Mazdoor	day	0.200	310.00	62.00	L-13
			Mazdoor (Skilled)	day	0.100	442.00	44.20	L-15
			b) Material					
			Premoulded joint filler 12 m long,20 mm thick and 300 mm deep.	sqm	3.600	613.27	2207.77	M-141
			c) GST @ 12 % on (a+b)				278.10	
			d) Overhead charges @ 20 % on (a+b+c)				519.12	
			e) Contractor's profit @ 10 % on (a+b+c+d)				311.47	
			f) Cess @ 1% on (a+b+c+d+e)				34.26	
			Cost for 12 m = (a+b+c+d+e+f)				3460.46	
			Rate per m = (a+b+c+d+e+f)/12				288.37	
						say	***288.00***	
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	0.020	354.00	7.08	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			Mazdoor (Skilled)	day	0.100	442.00	44.20	L-15
			b) Material					
			Sand	cum	0.010	601.77	6.02	M-005
			Volume 12 x 0.1 x 0.01 = 0.012 cum					
			Weight 0.012 x 1400 = 16.8kg					
			Bitumen	cum	0.000	57350.44	0.00	M-074
			16.8 x 0.06 = 1 kg					
			c) GST @ 12 % on (a+b)				25.48	
			d) Overhead charges @ 20 % on (a+b+c)				47.56	
			e) Contractor's profit @ 10 % on (a+b+c+d)				28.53	
			f) Cess @ 1% on (a+b+c+d+e)				3.14	
			Cost for 12 m = (a+b+c+d+e+f)				317.01	
			Rate per m = (a+b+c+d+e+f)/12				26.42	
						say	***26.00***	
		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					

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.19	**2600**		**Asphaltic Plug joint** **Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of weldable 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.**					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			Mazdoor (Skilled)	day	0.300	442.00	132.60	L-15
			b) Material					
			Crushed stone aggregate 12.5 mm nominal size	cum	0.750	1895.58	1421.69	M-052
			Polymer modified bitumen	kg	77.500	52.47	4066.43	M-078/ 1000
		2.4	Galvanised structural steel plate 200 mm wide,6 mm thick, 12 m long (2.4 sqm) @ 47.10 kg/sqm including 5 per cent wastage	kg	113.000	221.24	25000.12	M-103
			Add 1 per cent for welding and foam caulking/backer rod and other incidentals.				309.49	
			c) Machinery					
			Mastic cooker 1 tonne capacity	hour	1.000	104.42	104.42	P&M-030
			Smooth 3-wheeled steel roller 8-10 capacity	hour	0.500	561.95	280.98	P&M-044
			d) GST @ 12 % on (a+b+c)				3797.21	
			e) Overhead charges @ 20 % on (a+b+c+d)				7088.13	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				4252.88	
			g) Cess @ 1% on (a+b+c+d+e+f)				467.82	
			Cost for 12 m asphalt plug joint = (a+b+c+d+e+f+g)				47249.47	
			Rate per m = (a+b+c+d+e+f+g)/12				3937.46	
						say	***3937.00***	
		Note	The nominal size of aggregates shall be 12.5 mm for depth of joint upto 75 mm and 20 mm for joints of depth more than 75 mm.					
14.20	**2606**		**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.**					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.060	354.00	21.24	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Material					
			Supply of elastomeric slab seal expansion joint assembly manufactured by using chloroprene, elastomer for elastomeric slab unit conforming to clause 915.1 of IRC: 83 (part II), complete as per approved drawings and standard specification conforming to clause 2606 of MoRT&H Specification	metre	12.000	11038.94	132467.28	M-093
			Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				6623.36	
			c) GST @ 12 % on (a+b)				16757.15	
			d) Overhead charges @ 20 % on (a+b+c)				31280.01	
			e) Contractor's profit @ 10 % on (a+b+c+d)				18768.00	
			f) Cess @ 1% on (a+b+c+d+e)				2064.48	
			Cost for 12 m = (a+b+c+d+e+f)				208512.52	
			Rate per m = (a+b+c+d+e+f)/12				17376.04	
						say	***17376.00***	
14.21	**2600**		**Compression Seal Joint**					
			Providing and laying of compression seal joint consisting of steel armoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and fixed into the joint gap with special adhesive binder to cater for a horizontal movement upto 40 mm and vertical movement of 3 mm.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	0.600	310.00	186.00	L-13
			Mazdoor (Skilled)	day	0.300	442.00	132.60	L-15
			b) Material					
			1. Galvanised angle sections 100mm x 100mm of 12mm thickness weldable structural steel as per IS: 2062, 2 nos. of 12 m length each @ 17.7 kg/m and 5 per cent wastage.	kg	446.000	221.24	98673.04	M-103
			Add 5 per cent of cost of above for structural steel for anchorage, welding and other incidentals.				4950.29	
			Preformed continuous chloroprene elastomer or closed cell foam sealing element with high tear strength, vulcanised in a single operation for the full length of a joint to ensure water tightness.	metre	12.000	4906.19	58874.28	M-143
			Add 1 per cent of cost of sealing element for lubricant-cum-adhesive and other consumables.				588.74	
			c) GST @ 12 % on (a+b)				19610.29	
			d) Overhead charges @ 20 % on (a+b+c)				36605.88	
			e) Contractor's profit @ 10 % on (a+b+c+d)				21963.53	
			f) Cess @ 1% on (a+b+c+d+e)				2415.99	
			Cost for 12 m = (a+b+c+d+e+f)				244014.80	
			Rate per m = (a+b+c+d+e+f)/12				20334.57	
						say	***20335.00***	

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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. **3.** The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					
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	0.050	354.00	17.70	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			Mazdoor (Skilled)	day	0.250	442.00	110.50	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	12.000	13492.04	161904.48	M-178
			Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				8117.13	
			c) GST @ 12 % on (a+b)				20455.18	
			d) Overhead charges @ 20 % on (a+b+c)				38183.00	
			e) Contractor's profit @ 10 % on (a+b+c+d)				22909.80	
			f) Cess @ 1% on (a+b+c+d+e)				2520.08	
			Cost for 12 m = (a+b+c+d+e+f)				254527.87	
			Rate per m = (a+b+c+d+e+f)/12				21210.66	
						say	***21211.00***	
		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.					
14.23	**2600**		**Modular Strip / Box Seal Joint** **Providing and laying of a modular strip Box seal 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.** ***Unit = Running meter*** ***Taking output = 12 m***					
			a) Labour					
			Mate	day	0.060	354.00	21.24	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			Mazdoor (Skilled)	day	0.400	442.00	176.80	L-15

Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Material					
			Supply of a modular strip/box seal joint assembly comprising of edge beams, central beam,2 modules chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative.	metre	12.000	233044.25	2796531.00	M-127
			c) GST @ 12 % on (a+b)				335644.68	
			d) Overhead charges @ 20 % on (a+b+c)				626536.74	
			e) Contractor's profit @ 10 % on (a+b+c+d)				375922.05	
			f) Cess @ 1% on (a+b+c+d+e)				41351.43	
			Cost for 12 m Modular strip/box seal joint = (a+b+c+d+e+f)				4176493.94	
			Rate per m = (a+b+c+d+e+f)/12				348041.16	
						say	***348041.00***	
		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. **3.** The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					
14.24	**2600**		**Modular Strip / Box Seal Joint** **Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.** ***Unit = Running meter*** ***Taking output = 12 m***					
			a) Labour					
			Mate	day	0.070	354.00	24.78	L-12
			Mazdoor	day	1.250	310.00	387.50	L-13
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15
			b) Material					
			Supply of a modular box/box seal joint assembly containing 3 modules/cells and comprising of edge beams, two central beams, chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative.	metre	12.000	257575.22	3090902.64	M-128
			c) GST @ 12 % on (a+b)				370984.31	
			d) Overhead charges @ 20 % on (a+b+c)				692504.05	
			e) Contractor's profit @ 10 % on (a+b+c+d)				415502.43	
			f) Cess @ 1% on (a+b+c+d+e)				45705.27	
			Cost for 12 m Modular strip/box seal joint = (a+b+c+d+e+f)				4616231.98	
			Rate per m = (a+b+c+d+e+f)/12				384686.00	
						say	***384686.00***	
		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. **3.** The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					

Chapter – 15

PROTECTION WORKS

Preamble:

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

a. Boulder apron laid dry

b. Boulder apron laid in wire crates

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

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

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

4 Curtain walls proposed are of the following types:

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

c. Cement concrete M-15 grade

5 The rate analysis for gabion structures comprising of stone boulders laid in wire crates have been included. Such structures are suited as retaining structures and for erosion control in river training works especially for situations where some settlement of foundation is anticipated. These structures can adjust in minor settlements, being flexible structures, without losing their functional requirement.

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	1.000	484.96	484.96	M-003
			Stone Spalls	cum	0.200	446.02	89.20	M-008
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mason	day	0.350	442.00	154.70	L-11
			Mazdoor *	day	0.750	310.00	232.50	L-13
			c) GST @ 12 % on (a+b)				117.06	
			d) Overhead charges @ 20 % on (a+b+c)				218.52	
			e) Contractor's profit @ 10 % on (a+b+c+d)				131.11	
			f) Cess @ 1% on (a+b+c+d+e)				14.42	
			Rate per cum = (a+b+c+d+e+f)				1456.63	
						say	***1457.00***	
			* 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	22.000	189.38	4166.36	M-102
			Stone	cum	5.630	484.96	2730.32	M-003
			Stone Spalls	cum	1.130	446.02	504.00	M-008
			b) Labour					
			Mate	day	0.180	354.00	63.72	L-12
			Mazdoor (Skilled)	day	1.500	442.00	663.00	L-15
			Mazdoor	day	*3.00	310.00	930.0	L-13
			c) GST @ 12 % on (a+b)				1086.89	
			d) Overhead charges @ 20 % on (a+b+c)				2028.86	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1217.32	
			f) Cess @ 1% on (a+b+c+d+e)				133.90	
			Cost for 5.63 cum = a+b+c+d+e+f				13524.37	
			Rate per cum = (a+b+c+d+e+f)/5.63				2402.20	
						say	***2402.00***	
			* 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.					

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 GST, OH, CP & Cess.	cum	1.000	7876.00	7876.00	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.				157.52	
			Rate per cum				8033.52	
						say	***8034.00***	
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	1.000	484.96	484.96	M-003
			Stone spalls of minimum 25 mm size	cum	0.200	446.02	89.20	M-008
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mason	day	0.350	442.00	154.70	L-11
			Mazdoor	day	0.750	310.00	232.50	L-13
			c) GST @ 12 % on (a+b)				117.06	
			d) Overhead charges @ 20 % on (a+b+c)				218.52	
			e) Contractor's profit @ 10 % on (a+b+c+d)				131.11	
			f) Cess @ 1% on (a+b+c+d+e)				14.42	
			Rate per cum = (a+b+c+d+e+f)				1456.63	
						say	***1457.00***	
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) including GST, OH, CP & Cess.	cum	1.000	7876.00	7876.00	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.				157.52	
			Rate per cum				8033.52	
						say	***8034.00***	
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	1.200	1283.19	1539.83	M-012

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mazdoor (Skilled)	day	0.250	442.00	110.50	L-15
			Mazdoor *	day	1.000	310.00	310.00	L-13
			c) GST @ 12 % on (a+b)				237.36	
			d) Overhead charges @ 20 % on (a+b+c)				443.08	
			e) Contractor's profit @ 10 % on (a+b+c+d)				265.85	
			f) Cess @ 1% on (a+b+c+d+e)				29.24	
			Rate per cum = (a+b+c+d+e+f)				2953.56	
						say	***2954.00***	
			Includes Mazdoor required for trimming of slope to proper profile and preparation of bed.					
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 GST, OH, CP & Cess	cum	0.330	5543.00	1829.19	Item 12.6 (A)
			b) Add for cement concrete bedding (M15 Nominal mix) vide Item 12.8 (A) excluding GST, OH, CP & Cess . Quantity shall be adopted as per design (Assume Rubble stone Flooring thickness 300mm and cement concrete bedding thickness 100mm)	cum	0.330	5072.00	1673.76	Item 12.8 (A)
			Add 1 per cent of cost to account for excavation for preparation of bed.				35.03	
			c) Material					
			Stone	cum	1.000	484.96	484.96	M-003
			Stone Spalls	cum	0.200	446.02	89.20	M-008
			d) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mason	day	0.500	442.00	221.00	L-11
			Mazdoor (for laying stones, filling of quarry spalls)	day	1.500	310.00	465.00	L-13
			e) GST @ 12 % on (a+b+c+d)				574.97	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1073.28	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				643.97	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				70.84	
			Rate per cum = (a+b+c+d+e+f+g+h)				7189.52	
						say	***7190.00***	
		*	Includes cement mortar for laying and filling of joints.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
15.8		**B**	**Cement Concrete blocks Grade M15**					
			Concrete Grade M15 block. (Rate as per item No. 12.8 (A) including GST, OH, CP & Cess.	cum	1.000	7876.00	7876.00	Item 12.8 (A)
			Add for cement concrete bedding (M15 Nominal mix) vide Item 12.8 (A) including GST, OH, CP & Cess. Quantity shall be adopted as per design (Assume Cement Concrete blocks thickness 300mm and cement concrete bedding thickness 100mm)	cum	0.330	7876.00	2599.08	Item 12.8 (A)
			Add 1 per cent of cost to account for excavation for preparation of bed.				104.75	
			Rate per cum				10579.83	
						say	***10580.00***	
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	1.000	484.96	484.96	M-003
			Stone Spalls	cum	0.200	446.02	89.20	M-008
			b) Labour					
			Mate	day	0.100	354.00	35.40	L-12
			Mason	day	0.500	442.00	221.00	L-11
			mazdoor	day	1.500	310.00	465.00	L-13
			Add 1 per cent of (b) for trimming and preparation of base.				7.21	
			c) GST @ 12 % on (a+b)				156.33	
			d) Overhead charges @ 20 % on (a+b+c)				291.82	
			e) Contractor's profit @ 10 % on (a+b+c+d)				175.09	
			f) Cess @ 1% on (a+b+c+d+e)				19.26	
			Rate per cum = (a+b+c+d+e+f)				1945.27	
						say	***1945.00***	
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) (Rate as per item No. 12.7 (A) including GST, OH, CP & Cess.	cum	1.000	5470.00	5470.00	Item 12.7 (A)
			Rate per cum			***say***	***5470.00***	
			or					
15.10		**B**	**Cement concrete Grade M15**					
			Concrete Grade M15 Rate as per item No. 12.8 (A) including GST, OH, CP & Cess.	cum	1.000	7876.00	7876.00	Item 12.8 (A)
			Rate per cum			***say***	***7876.00***	
		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					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Taking Output = 1 cum					
			a) Material					
			Stone	cum	1.000	484.96	484.96	M-003
			Stone Spalls	cum	0.200	446.02	89.20	M-008
			b) Labour					
			Mate	day	0.050	354.00	17.70	L-12
			Mason	day	0.250	442.00	110.50	L-11
			Mazdoor	day	1.000	310.00	310.00	L-13
			Add 1 per cent of cost of (a+b) for trimming and preparation of bed.				10.12	
			c) GST @ 12 % on (a+b)				122.70	
			d) Overhead charges @ 20 % on (a+b+c)				229.04	
			e) Contractor's profit @ 10 % on (a+b+c+d)				137.42	
			f) Cess @ 1% on (a+b+c+d+e)				15.12	
			Rate per cum = (a+b+c+d+e+f)				1526.76	
						say	***1527.00***	
15.12	**2503.3**		**Gabian Structure for Retaining Earth**					
			Providing and construction of a gabian 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					
			Unit = cum					
			Taking output = 7 x 3 x 0.6 = 12.60 cum					
			a) Labour					
			Mate	day	0.280	354.00	99.12	L-12
			Mazdoor	day	5.000	310.00	1550.00	L-13
			Mazdoor (Skilled)	day	2.000	442.00	884.00	L-15
			b) Material					
			Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	sqm	61.000	189.38	11552.18	M-102
			Stone boulders with least dimension of 200 mm	cum	12.600	484.96	6110.50	M-003
			Stone spalls of minimum size 25 mm	cum	2.520	446.02	1123.97	M-008
			c) GST @ 12 % on (a+b)				2558.37	
			d) Overhead charges @ 20 % on (a+b+c)				4775.63	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2865.38	
			f) Cess @ 1% on (a+b+c+d+e)				315.19	
			Cost for 12.60 cum (a+b+c+d+e+f)				31834.34	
			Rate per cum (a+b+c+d+e+f)/12.60				2526.53	
						say	***2527.00***	

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.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
15.13	2503.3		**Gabian Structure for Erosion Control, River Training Works and Protection works** **Providing and constructing gabian 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.** ***Unit = cum*** ***Taking output = 2 x 1 x 0.3 x 10 Nos. = 6.00 cum***					
			a) Labour					
			Mate	day	0.140	354.00	49.56	L-12
			Mazdoor	day	2.500	310.00	775.00	L-13
			Mazdoor (Skilled)	day	1.000	442.00	442.00	L-15
			b) Material					
			Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size to cover 6.00 cum.	sqm	65.000	189.38	12309.70	M-102
			Stone boulders with least dimension of 200 mm	cum	6.000	484.96	2909.76	M-003
			Stone spalls of minimum size 25 mm	cum	1.200	446.02	535.22	M-008
			c) GST @ 12 % on (a+b)				2042.55	
			d) Overhead charges @ 20 % on (a+b+c)				3812.76	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2287.66	
			f) Cess @ 1% on (a+b+c+d+e)				251.64	
			Cost for 6.00 cum (a+b+c+d+e+f)				25415.85	
			Rate per cum (a+b+c+d+e+f)/6.00				4235.98	
						say	***4236.00***	
			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.					

Chapter – 16

REPAIR AND REHABILITATION

Preamble:

1 Removal of cement concrete wearing coat and asphaltic wearing coat has been proposed with pneumatic breakers.

2 The rate for external prestressing has been analysed for three different spans of 25, 50 and 100 m.

3 Sealing of cracks has been proposed with cement grout, cement mortar (1:1) grout and epoxy grout by injecting with grout pump through nipples.

4 Bonding of new concrete with old concrete is proposed with epoxy resin.

5 The repair and replacement of following structures has been included -

a) Bridge Bearings

b) Expansion Joints

c) Concrete Railing

d) Mild Steel Railing

e) Crash Barrier

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	0.060	354.00	21.24	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with pneumatic breaker/jack hammer along with accessories.	hour	1.000	575.22	575.22	P&M-001
			Tractor-trolley.	hour	0.500	476.11	238.06	P&M-053
			c) GST @ 12 % on (a+b)				137.34	
			d) Overhead charges @ 10 % on (a+b+c)				128.19	
			e) Contractor's profit @ 10 % on (a+b+c+d)				141.01	
			f) Cess @ 1% on (a+b+c+d+e)				15.51	
			Cost for 10 sqm = (a+d+c+d+e+f)				1566.57	
			Rate per sqm = (a+b+c+d+e+f)/10				156.66	
						say	***157.00***	
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	0.030	354.00	10.62	L-12
			Mazdoor	day	0.750	310.00	232.50	L-13
			b) Machinery					
			Air Compressor 250 cfm with pneumatic breaker.	hour	0.750	575.22	431.42	P&M-001
			Tractor-trolley.	hour	0.400	476.11	190.44	P&M-053
			c) GST @ 12 % on (a+b)				103.80	
			d) Overhead charges @ 10 % on (a+b+c)				96.88	
			e) Contractor's profit @ 10 % on (a+b+c+d)				106.57	
			f) Cess @ 1% on (a+b+c+d+e)				11.72	
			Cost for 10 sqm = (a+d+c+d+e+f)				1183.95	
			Rate per sqm = (a+b+c+d+e+f)/10				118.40	
						say	***118.00***	
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	16.000	9.05	144.80	M-081/1000
			Graded sand	cum	0.040	601.77	24.07	M-005
			Wire mesh 50mm x 50mm size of 3mm wire	kg	2.000	161.95	323.90	M-192
			Epoxy	kg	0.670	245.13	164.24	M-095
			Accelerator compound for guniting @ 4 per cent of weight of cement	kg	0.640	61.06	39.08	M-180

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Add 2 per cent of cost of material for miscellaneous consumables like nozzles, wire brush, cotton waste etc.				13.92	
			b) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Mason	day	0.040	442.00	17.68	L-11
			Mazdoor	day	0.140	310.00	43.40	L-13
			c) Machinery					
			Compressor with guniting equipment along with accessories	hour	0.100	809.73	80.97	P&M-076
			d) GST @ 12 % on (a+b+c)				102.67	
			e) Overhead charges @ 10 % on				95.83	
			f) Contractor's profit @ 10 % on				105.41	
			g) Cess @ 1% on (a+b+c+d+e+f)				11.60	
			Rate per sqm = (a+b+c+d+e+f+g)				1171.11	
						say	***1171.00***	
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	1.000	30.09	30.09	M-129
			Cement, fixing compound and consumables @ 15 per cent of cost of nipple				4.51	
			b) Labour					
			Mate	day	0.010	354.00	3.54	L-12
			Mazdoor (Skilled) labour for drilling	day	0.080	442.00	35.36	L-15
			Mazdoor (Skilled) labour for fixing nipple and sealing inlets	day	0.080	442.00	35.36	L-15
			Mazdoor for cutting and removing of nipples	day	0.040	310.00	12.40	L-13
			Add 10 per cent of labour cost for drilling holes etc				8.67	
			c) GST @ 12 % on (a+b)				15.59	
			d) Overhead charges @ 10 % on (a+b+c)				14.55	
			e) Contractor's profit @ 10 % on (a+b+c+d)				16.01	
			f) Cess @ 1% on (a+b+c+d+e)				1.76	
			Rate per No. = (a+b+c+d)				177.84	
						say	***178.00***	
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	1.100	9.05	9.96	M-081/1000
			Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				1.99	
			b) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor (Skilled)	day	0.100	442.00	44.20	L-15
			Mazdoor	day	0.100	310.00	31.00	L-13

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) Machinery					
			Grout pump with agitator and accessories	hour	0.100	184.07	18.41	M-111
			d) GST @ 12 % on (a+b+c)				16.07	
			e) Overhead charges @ 10 % on (a+b+c+d)				15.00	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				16.50	
			g) Cess @ 1% on (a+b+c+d+e+f)				1.81	
			Rate per kg = (a+b+c+d+e+f+g)				183.26	
						say	***183.00***	
		B	**Cement Mortar (1:1) Grouting**					
			Unit = kg					
			Taking output = 1 kg					
			a) Material					
			Cement including 10 per cent wastage	kg	0.550	9.05	4.98	M-081/1000
			Sand including 10 per cent wastage	kg	0.550	0.40	0.22	M-005/1500
			Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				1.00	
			b) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor (Skilled)	day	0.100	442.00	44.20	L-15
			Mazdoor	day	0.100	310.00	31.00	L-13
			c) Machinery					
			Grout pump with agitator and accessories	hour	0.100	184.07	18.41	M-111
			d) GST @ 12 % on (a+b+c)				15.38	
			e) Overhead charges @ 10 % on				14.35	
			f) Contractor's profit @ 10 % on				15.79	
			g) Cess @ 1% on (a+b+c+d+e+f)				1.74	
			Rate per kg = (a+b+c+d+e+f+g)				175.39	
						say	***175.00***	
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	0.060	354.00	21.24	L-12
			Mazdoor (Skilled)	day	0.750	442.00	331.50	L-15
			Mazdoor	day	0.750	310.00	232.50	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	315.000	37.17	11708.55	M-145
			c) Machinery					
			Grout pump with agitator and accessories	hour	2.000	184.07	368.14	M-111
			d) GST @ 12 % on (a+b+c)				1519.43	
			e) Overhead charges @ 10 % on (a+b+c+d)				1418.14	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				1559.95	
			g) Cess @ 1% on (a+b+c+d+e+f)				171.59	
			Cost for 10 sqm = a+b+c+d+e+f+g				17331.04	
			Rate per sqm = (a+b+c+d+e+f+g)/10				1733.10	
						say	***1733.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		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	1.100	245.13	269.64	M-095
			b) Labour					
			Mate	day	0.080	354.00	28.32	L-12
			Mazdoor (Skilled)	day	0.100	442.00	44.20	L-15
			Mazdoor	day	0.100	310.00	31.00	L-13
			c) Machinery					
			Epoxy Injection gun	hour	0.100	3373.45	337.35	P&M-078
			d) GST @ 12 % on (a+b+c)				85.26	
			e) Overhead charges @ 10 % on (a+b+c+d)				79.58	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				87.54	
			g) Cess @ 1% on (a+b+c+d+e+f)				9.63	
			Rate per kg = (a+b+c+d+e+f+g)				972.52	
						say	***973.00***	
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	0.040	354.00	14.16	L-12
			Mazdoor	day	0.500	310.00	155.00	L-13
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	1.000	575.22	575.22	P&M-001
			Shotcreteing equipment	hour	1.000	809.73	809.73	P&M-076
			water tanker 6 KL capacity	hour	0.020	544.25	10.89	P&M-060
			c) Material					
			Cement	kg	120.000	9.05	1086.00	M-081/1000
			Sand	cum	0.150	601.77	90.27	M-005
			Coarse aggregate of size 4.75mm	cum	0.150	669.03	100.35	M-024
			Quick setting compound	kg	2.500	55.75	139.38	M-147
			Water	KL	0.100	67.26	6.73	M-189
			d) GST @ 12 % on (a+b+c)				385.05	
			e) Overhead charges @ 10 % on (a+b+c+d)				359.38	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				395.32	
			g) Cess @ 1% on (a+b+c+d+e+f)				43.48	
			Cost for 10 sqm = a+b+c+d+e+f+g				4391.96	
			Rate per sqm = (a+b+c+d+e+f+g)/10				439.20	
						say	***439.00***	

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	1.400	278.76	390.26	M-057
			pre-packed cement based polymer mortar of strength 45 Mpa at 28 days	kg	12.000	37.17	446.04	M-145
			Add 3 per cent of (a) above for wastage.				25.09	
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15
			Mazdoor	day	0.500	310.00	155.00	L-13
			c) GST @ 12 % on (a+b)				150.19	
			d) Overhead charges @ 10 % on (a+b+c)				140.17	
			e) Contractor's profit @ 10 % on (a+b+c+d)				154.19	
			f) Cess @ 1% on (a+b+c+d+e)				16.96	
			Cost for 10 sqm = a+b+c+d+e+f				1713.06	
			Rate per sqm = (a+b+c+d+e+f)/10				171.31	
						say	***171.00***	
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	8.000	167.26	1338.08	M-098
			Add 3 per cent of (a) above for wastage.				40.14	
			b) Labour					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15
			Mazdoor	day	0.500	310.00	155.00	L-13
			c) GST @ 12 % on (a+b)				212.21	
			d) Overhead charges @ 10 % on (a+b+c)				198.06	
			e) Contractor's profit @ 10 % on (a+b+c+d)				217.87	
			f) Cess @ 1% on (a+b+c+d+e)				23.97	
			Cost for 10 sqm = a+b+c+d+e+f				2420.49	
			Rate per sqm = (a+b+c+d+e+f)/10				242.05	
						say	***242.00***	
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	9.600	245.13	2353.25	M-095
			M-30 grade cement concrete excluding GST,OH, CP & Cess (Rate as per items 14.1 C (i)	cum	3.600	7447.00	26809.20	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	0.260	354.00	92.04	L-12
			Mazdoor	day	6.000	310.00	1860.00	L-13

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor (Skilled)	day	0.500	442.00	221.00	L-15
			c) GST @ 12 % on (a+b)				3760.26	
			d) Overhead charges @ 10 % on (a+b+c)				3509.58	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3860.53	
			f) Cess @ 1% on (a+b+c+d+e)				424.66	
			Cost for replacement of 12 RM = a+b+c+d+e+f				42890.52	
			Rate per RM = (a+b+c+d+e+f)/12				3574.21	
						say	***3574.00***	
		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.					
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	0.200	354.00	70.80	L-12
			Mazdoor	day	5.000	310.00	1550.00	L-13
			b) Machinery					
			Tractor-trolley for disposal of dismantled material	hour	1.000	476.11	476.11	P&M-053
			c) GST @ 12 % on (a+b)				251.63	
			d) Overhead charges @ 10 % on				234.85	
			e) Contractor's profit @ 10 % on				258.34	
			f) Cess @ 1% on (a+b+c+d+e)				28.42	
			Cost for 10 m = a+b+c+d+e+f				2870.15	
			Rate per metre = (a+b+c+d+e+f)/10				287.02	
						say	***287.00***	
		Note	The rate for the provision of new railing may be adopted from the chapter on superstructure.					
16.19			**Replacement of Crash Barrier.**					
			Unit = RM					
			Taking output = 10 M					
			a) Labour					
			Labour for dismantling old railing and disposal of dismantled material.					
			Mate	day	0.400	354.00	141.60	L-12
			Mazdoor	day	10.000	310.00	3100.00	L-13
			b) Machinery					
			Tractor-trolley for disposal of dismantled material	hour	1.000	476.11	476.11	P&M-053
			c) GST @ 12 % on (a+b)				446.13	
			d) Overhead charges @ 10 % on				416.38	
			e) Contractor's profit @ 10 % on				458.02	
			f) Cess @ 1% on (a+b+c+d+e)				50.38	
			Cost for 10 m = a+b+c+d+e+f				5088.62	
			Rate per metre = (a+b+c+d+e+f)/10				508.86	
						say	***509.00***	
		Note	The rate for the construction of new crash barrier may be adopted from chapter 8 on Traffic and Transportation.					
16.20			**Replacement of Damaged Mild Steel Railing**					
			Unit = RM					
			Taking output = 10 M					
			a) Labour					
			Labour for dismantling old railing and disposal of dismantled material.					

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mate	day	0.160	354.00	56.64	L-12
			Mazdoor	day	4.000	310.00	1240.00	L-13
			b) Machinery					
			Tractor-trolley for disposal of dismantled material	hour	1.000	476.11	476.11	P&M-053
			c) GST @ 12 % on (a+b)				212.73	
			d) Overhead charges @ 10 % on				198.55	
			e) Contractor's profit @ 10 % on				218.40	
			f) Cess @ 1% on (a+b+c+d+e)				24.02	
			Cost for 10 m = a+b+c+d+e+f				2426.45	
			Rate per metre = (a+b+c+d+e+f)/10				242.65	
						say	***243.00***	
16.21			**Repair of Crash Barrier**					
			Repair of concrete crash barrier with cement concert of M-30 grade by cutting and trimming the damaged portion to a regular shape, cleaning the area to be repaired thoroughly, applying cement concert after erection of proper form work.					
			Unit = Running meter.					
			Taking output = 10 M.					
			It is assumed that damage is to the extent of 10 per cent of the volume of concrete .This will require 0.30 cum of concrete.					
			a) Manpower*					
			Mate	day	0.040	354.00	14.16	L-12
			Mazdoor	day	1.000	310.00	310.00	L-13
			* For dismantling and trimming the surface to a regular shape and removal of damaged material.					
			b) Material					
			M-30 grade cement concrete excluding GST,OH, CP & Cess (Rate as per items 14.1 C (i)	cum	0.300	7447.00	2234.10	Item 14.1(C)
			This may be priced based on the rate given the chapter of superstructure.					
			c) GST @ 12 % on (a+b)				306.99	
			d) Overhead charges @ 10 % on				286.53	
			e) Contractor's profit @ 10 % on				315.18	
			f) Cess @ 1% on (a+b+c+d+e)				34.67	
			Cost for 10 m = a+b+c+d+e+f				3501.63	
			Rate per metre = (a+b+c+d+e+f)/10				350.16	
						say	***350.00***	
16.22			**Repair of RCC Railing**					
			Carrying out repair of RCC M30 railing to bring it to the original shape.					
			Unit = Running meter.					
			Taking output = 10 M.					
			It is assumed that damage is to the extent of 10 per cent .					
			a) Material					
			M-30 grade cement concrete excluding GST,OH, CP & Cess (Rate as per items 14.1 C (i)	cum	0.100	7447.00	744.70	Item 14.1(C)
			HYSD bar reinforcement Rate as per item No 14.2(Excluding GST,OH, CP & Cess)	tonne	0.010	67488.00	674.88	Item 14.2 A
			b) Labour*					
			Mate	day	0.020	354.00	7.08	L-12
			mazdoor	day	0.200	310.00	62.00	L-13

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		*	For dismantling and trimming the surface to a regular shape and removal of damaged material.					
			c) GST @ 12 % on (a+b)				178.64	
			c) Overhead charges @ 10 % on (b)				166.73	
			d) Contractor's profit @ 10 % on				183.40	
			f) Cess @ 1% on (a+b+c+d+e)				20.17	
			Cost for 10 m = a+b+c+d				2037.60	
			Rate per m = (a+b+c+d)/10				203.76	
						say	***204.00***	
16.23			**Repair of Steel Railing**					
			Repair of steel railing to bring it to the original shape It is assumed that the damage to the steel railing is to the extent of 10 per cent .					
			Unit = Running meter.					
			Taking output = 10 M.					
			a) Material					
			Mild steel ISMC series	kg	29.000	48.31	1400.99	M-179/1000
			Flat iron	kg	10.000	48.31	483.10	M-179/1000
			MS Bolt and nuts	kg	1.000	111.50	111.50	M-130
			Add 5 per cent of cost of material for painting.				99.78	
			b) Labour					
			Mate	day	0.016	354.00	5.66	L-12
			Mazdoor (Skilled)	day	0.200	442.00	88.40	L-15
			Mazdoor	day	0.200	310.00	62.00	L-13
			c) GST @ 12 % on (a+b)				270.17	
			c) Overhead charges @ 10 % on (b)				252.16	
			d) Contractor's profit @ 10 % on (b+c)				277.38	
			f) Cess @ 1% on (a+b+c+d+e)				30.51	
			Cost for 10 m = a+b+c+d				3081.65	
			Rate per m = (a+b+c+d)/10				308.17	
						say	***308.00***	

Chapter – 17
B. Bridge Works

Preamble :

The basic approach for the preparation of schedule of rates for Bridge works in indicated as under :

1. **Description of items**

   The description of items is given briefly and linked with relevant clause of MoRT&H's Specifications for Road and Bridge Works, which may be referred for detailed description, provisions and interpretation.

2. **Overhead Charges**

   The rates include over head charges considering the following elements -

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

   ii. Office furniture, equipment and communications.

   iii. Expenditure on

   a) Corporate office of contractor
   b) Site Supervision
   c) Documentation and "as built" drawings

   iv. Mobilisation/de-mobilisation of resources.

   v. Labour camps with minimum amenities and transportation to work sites.

   vi. Light vehicles for site supervision including administrative and managerial

   vii. Laboratory equipment and quality control including field and laboratory testing

   viii. Minor T&P and survey instruments and setting out works, including verification of line, dimensions, trial pits and bore holes, where required

   ix. Watch and ward

   x. Traffic management during construction

   xi. Expenditure on safeguarding environment

   xii. Sundries

   xiii. Financing Expenditure

   xiv. Sales/Turn over tax

   xv. Work Insurance/compensation

3 **20 percent overhead charges has been considered in the schedule of rates**

4. **Contractor Profit**

   10 percent of cost of works. Contractor profit is also added on overhead charges.

5 **Materials**

6 Quantities of materials considered in the rate are approximate for the purpose of estimating and include normal wastages.

7	The transportation cost has to be included seperately in the estimate as per actual distance from the fabrication shop to work site inclusive of loading and unloading and protected stacking in undamaged condition near site as per direction of the Engineer -in -charge.
8	Painting and the specfication of meterials to be used shall be as per section 1900 of MoRT&H Specifications for Road and Bridge Works.
9	One mate has been provided for 25 labours.
10	Carriage cost of bridge components from protected stacks near site has been included for transportation, assembling and erection as per requirement based on proved erection programme.
11	Arrangement for traffic during construction shall be as per Clause 112 of MoRT&H Speciffication for Road and Bridge Works.

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
17.1	1900		**Supply and fabrication of steel work at Fabricators workshop comprising of Main Girders, Cross Girders, Connecting plates, stringers, stiffening plates etc. from steel plates and structural steel of specified grades as per approved drawing including straightening, descaling, degreasing, cutting to size and shape, drilling, welding and grinding, supply of all MS / HTS shop or site bolts, nuts & washers, holding down bolts and nuts etc., trial assembling at workshop, one priming coat of shop paint with red lead paint conforming to IS-102 with all labour, material, cost of paints, consumables, stacking in protected condition etc complete as per specification and as directed by the Engineer in charge (Carriage cost from fabricator workshop to actual bridge site will be paid separately).**					
		A	**COMPOSITE BRIDGE**					
	Case	**(i)**	**Worked out based on 40m single span or in Multiples**					
			Unit = 1 MT					
			Taking output = 425.472 MT					
			a) Material					
			Structural steel in plates, angles, etc including 5 per cent wastage	cum	446.750	48312.00	21583386.00	M-179
			Nuts & Bolts	Kg	12764.200	111.50	1423208.30	M-130
			b) Labour (for cutting, bending, making holes, joining, welding and erecting in position)					
			Mate	day	421.220	354.00	149111.88	L-12
			Fitter		2340.100	442.00	1034324.20	L-08
			Blacksmith		2340.100	442.00	1034324.20	L-02
			Welder		2340.100	442.00	1034324.20	L-02
			Mazdoor	day	3510.140	310.00	1088143.40	L-13
			c) One coat of ready mixed lead primer painting at the shop conforming to IS:102 before shifting to site as per section 1906.4					
			3/5 part considered for one coat of primer after cleaning as specified under 1906.2 of section 1900	sqm	4995.040	95.00	474528.80	Item 8.9
			Add @ 1% on cost of material for scaffolding and temporary arrangement for assembling on (a)				230065.94	
			Electrodes, cutting gas and other consumables @ 10 percent of cost of (a) above. (Including GST,OH,CP &Cess of C)				2300659.43	
			d) GST @ 12 % on (a+b)				3281618.66	
			e) Overhead charges @ 20 % on (a+b+d)				6125688.17	
			f) Contractor's profit @ 10 % on (a+b+d+f)				2734682.22	
			g) Cess @ 1% on (a+b+d+e+f)				273468.22	
			Rate for 425.472 MT (a+b+c+d+e+f+g)				42767533.62	
			Rate per MT = (a+b+c+d+e+f+g)/425.472				100517.86	
						say	***100518.00***	

Sr No	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
17.2	**1900**		**Taking delivery of fabricated steel work from stacks at site as necessary, assembling and erection at site as necessary, assembling and erection of fabricated steel structure to proper line, level and camber as per approved drawings complete in asll respect including transportation and handling supply of all fasteners. Painting of all exposed surfaces of steel work after erection with one coat of red lead conforming to IS-102 and two coats Aluminium paint to IS-2339, grouting of anchor bolts in position, including all labour, consumables, materials, machinery, tools and tackles complete as per specification and as directed by the Engineer in charge**					
			COMPOSITE BRIDGE					
	Case	(i)	Worked out based on 40m single span or in Multiples ***Unit = 1 MT***					
			a) Assembling and erection at site including lablour component, erection cum dismantling of Staging, Scaffolding, Falsework etc complete. (A full proof method statement of erection programme at site has to be submitted and get approved before start)					
			Formwork, Staging and Cost of erection 15% + 15% = 30% of Item : 17.1 (a+b+c+d) (Excluding GST,OH,CP &Cess)	tonne	1.000	21401.23	21401.23	Item 17.1
			b) One coat of ready mixed, red lead primer painting after erection at site conforming to IS:102					
			2/5 part considered for one coat of primer after cleaning as specified under 1906 of section 1900	sqm	11.740	95.00	1115.30	Item 8.9
			Two coat of aluminium paint over steel primer after cleaning as specified under 1906 of section 1900	sqm	11.740	95.00	1115.30	Item 8.9
			(Including GST,OH,CP &Cess of b)					
			c) GST @ 12 % on (a+b)				2568.15	
			d) Overhead charges @ 20 % on (a+b+c)				4793.88	
			e) Contractor's profit @ 10 % on (a+b+c+d)				2876.33	
			f) Cess @ 1% on (a+b+d+e)				316.40	
			Rate per MT = (a + b + c + d+e+f)				34186.59	
						say	**34187.00**	