

**PUBLIC WORKS DEPARTMENT
ARUNACHAL PRADESH**



2023
ANALYSIS OF RATES
FOR
ROAD AND BRIDGE WORKS

ZERO LEAD BASED
(EXCLUDING CARRIAGE COST)

**PUBLISHED UNDER THE AUTHORITY OF
THE CHIEF ENGINEER (CSQ)
P.W.D., ARUNACHAL PRADESH, ITANAGAR**

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CHIEF MINISTER ARUNACHAL PRADESH

Message

I am glad to know that Arunachal Pradesh Schedule of Rates - 2023 and Arunachal Pradesh Analysis of Rates - 2023 for Road and Bridge 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 Rate 2023 and Arunachal Pradesh Analysis of Rates 2023 for Road and Bridge Works.

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



(Pema Khandu)

KALING TAYENG, IAS
PRINCIPAL SECRETARY



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MESSAGE

The Public Works Department, Arunachal Pradesh is bringing out the Schedule of Rates- 2023 and Analysis of Rates- 2023 for Road and Bridge work. The Schedule of Rates once brought out will be very useful for preparation of realistic projects estimate 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 -2023 and Arunachal Pradesh Analysis of Rates- 2023 for Road and Bridge works.

Date :- 20.08.2024

Place :- Itanagar


(Kaling Tayeng) IAS,
Principal Secretary (PWD)
Govt. of Arunachal Pradesh
Itanagar



FOREWORD

The Arunachal Pradesh Schedule of Rates and Analysis of Rates for Road and Bridge works was last published in the year 2021. 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 2023) and Analysis of Rates (APAR 2023) for Road and Works is brought out after updating the basic rates of labour and materials to present market rates and current prevailing GST.

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 2023 for Road and Bridges works, the rates of major construction materials like Cement, Steel and Bitumen are updated based on the rates in nearest authorized dealers located in foothills 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 nomenclature of items are as per the Standard Data Book of the **Ministry of Road Transport & 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 2023, the user shall acquaint themselves with the General Notes for Road & Bridge for various 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.

Overhead charges 10 % for Roads & Overhead charges 20 % for Bridges, GST 18% shown as multiplying factor of 0.2016, contractor's profit 10% and Labour cess 1% has been adopted in the rate of APAR 2023 and APSR 2023. (Road and Bridge Works).

Apart from state PWD, this Schedule of Rates is being used as a guide by numbers of departments, Public Sector Undertakings, private builders etc. The state PWD welcomes comments on this Schedule of Rates and Analysis of Rates from the users for improvement in future publications.

Taniyok Taga
Chief Engineer (CSQ)



Govt. of Arunachal Pradesh
Public Work Department
Nirman Bhawan, 2nd Floor
Itanagar, Arunachal Pradesh

It is mandatory as per CPWD Manual that the scheduled rate is updated after every alternative year. Hence, this scheduled rate will be due to revised or updating by 2025. Accordingly, all Divisions / Circles of PWD should furnish basic rates to this office in due date.

I would like to extend my gratitude and thanks to all Divisions / Circles of PWD officers & Staff who have given lot of input to bring out this schedule.

I appreciate my predecessor, Shri Robin Nani, then CE (CSQ) who immensely contributed in finalization of APSR 2023 & APAR 2023.

I express my sincere thanks to all officers and staff of CSQ, PWD for contributing their time in compiling of this schedule. Also, my special thanks and appreciation to Shri P.S. Bhattacharjee, Sr. Estimator who has given his full time and attention on the job.

Due care has been made to bring out APSR 2023 and APAR 2023 without error; still if such errors are noticed; same could be intimated to SE (CSQ) for necessary correction in the next edition.

E-mail : cecsqpwd@gmail.com

(Taniyok Taga)
Chief 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	658.00
P&M-002	Batching and Mixing Plant (a) 30 cum capacity	Concrete Mixing	cum/hour	20	hour	3,200.00
P&M-003	Batching and Mixing Plant (b) 15 - 20 cum capacity	Concrete Mixing	cum/hour	13	hour	3,154.00
P&M-004	Bitumen Pressure Distributor	Applying bitumen tack coat	sqm/hour	1750	hour	1,509.00
P&M-005	Bitumen Boiler oil fired	Bitumen Spraying	capacity in litre	1500	hour	348.00
P&M-006	Concrete Paver Finisher with 40 HP Motor	Paving of concrete surface	cum / hour	20	hour	3,690.00
P&M-007	Concrete Pump of 45 & 30 cum capacity	Pumping of concrete	cum / hour	33 / 22	hour	2,726.00
P&M-008	Concrete Bucket	For Pouring concrete	capacity in cum	1	hour	22.00
P&M-009	Concrete Mixer (a) 0.4/0.28 cum	Concrete Mixing	cum/hour	2.5	hour	291.00
P&M-010	Concrete Mixer (b) 1 cum	Concrete Mixing	cum/hour	7.5	hour	306.00
P&M-011	Crane (a) 80 tonnes	Lifting Purpose			hour	1,665.00
P&M-012	Cranes b) 35 tonnes	Lifting Purpose			hour	1,166.00
P&M-013	Cranes c) 3 tonnes	Lifting Purpose			hour	490.00
P&M-014	Dozer D - 80 - A 12	Spreading /Cutting / Clearing	cum/hour	300/ 150/250	hour	5,045.00
P&M-015	Dozer D - 50 - A 15	Spreading /Cutting / Clearing	cum/hour	200/ 120/150	hour	3,398.00
P&M-016	Emulsion Pressure Distributor	Applying emulsion tack coat	sqm/hour	1750	hour	1,160.00
P&M-017	Front End loader 1 cum bucket capacity	Soil loading / Aggregate loading	cum/hour	60 /25	hour	1,838.00

P&M-018	Generator (a) 125 KVA	Generation of electric Energy	KVA	100	hour	1,135.00
P&M-019	Generator(b) 63 KVA	Generation of electric Energy	KVA	50	hour	883.00
P&M-020	GSB Plant 50 cum	Producing GSB	cum/hour	40	hour	1,511.00
P&M-021	Hotmix Plant - 120 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	40	hour	32,730.00
P&M-022	Hotmix Plant - 100 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	30	hour	25,480.00
P&M-023	Hotmix Plant - 60 to 90 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	25	hour	20,099.00
P&M-024	Hotmix Plant - 40 to 60 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	17	hour	15,405.00
P&M-025	Hydraulic Chip Spreader	Surface Dressing	sqm/hour	1500	hour	3,640.00
P&M-026	Hydraulic Excavator of 1 cum bucket	Soil Ordinary/Soil Marshy / Soil Unsuitable	cum/hour	60 /60 /60	hour	2,044.00
P&M-027	Integrated Stone Crusher 100THP	Crushing of Spalls	TPH	100	hour	11,408.00
P&M-028	Integrated Stone Crusher 200 HP	Crushing of Spalls	TPH	200	hour	22,887.00
P&M-029	Kerb Casting Machine	Kerb Making	Rm/hour	80	hour	407.00
P&M-030	Mastic Cooker	Mastic Wearing coat	capacity in tonne	1	hour	135.00
P&M-031	Mechanical Broom Hydraulic	Surface Cleaning	sqm/hour	1250	hour	473.00
P&M-032	Motor Grader 3.35 mtr blade	Clearing /Spreading /GSB /WBM	cum/hour	200/200/50/50	hour	3,247.00
P&M-033	Mobile slurry seal equipment	Mixing and laying slurry seal	sqm/hour	2700	hour	1,328.00
P&M-034	Paver Finisher Hydrostatic with sensor control 100 TPH	Paving of DBM/ BM/SDC/ Premix	cum/hour	40	hour	3,847.00
P&M-035	Paver Finisher Mechanical 100 TPH	Paving of WMM /Paving of DLC	cum/hour	40/30	hour	1,386.00
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	10,129.00
P&M-037	Pneumatic Road Roller	Rolling of Asphalt Surface	cum/hour	25	hour	1,708.00
P&M-038	Pneumatic Sinking Plant	Pneumatic Sinking of wells	cum/hour	1.5 to 2.00	hour	5,508.00

P&M-039	Pot Hole Repair Machine	Repair of potholes	cum/hour	4	hour	1,207.00
P&M-040	Prestressing Jack with Pump & access	Stressing of steel wires/stands			hour	170.00
P&M-041	Ripper	Scarifying	cum/hour	60	hour	88.00
P&M-042	Rotavator	Scarifying	cum/hour	25	hour	57.00
P&M-043	Road marking machine	Road marking	Sqm/hour	100	hour	128.00
P&M-044	Smooth Wheeled Roller 8 tonne	Soil Compaction /BM Compaction	cum/hour	70/25	hour	783.00
P&M-045	Tandem Road Roller	Rolling of Aspalt Surface	cum/hour	30	hour	1,641.00
P&M-046	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	km	87.00
P&M-047	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	tonne.km	87.00
P&M-048	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	hour	916.00
P&M-049	Transit Mixer 4.0/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	hour	1,265.00
P&M-050	Transit Mixer 4/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	tonne.km	80.00
P&M-051	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	hour	1,174.00
P&M-052	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	tonne.km	79.00
P&M-053	Tractor	Pulling	capacity in HP	50	hour	530.00
P&M-054	Tractor with Rotevator	Rate of Tractor + Rotevator			hour	494.00
P&M-055	Tractor with Ripper	Rate of Tractor 6+ Ripper			hour	511.00
P&M-056	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	km	106.00
P&M-057	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	hour	778.00
P&M-058	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	tonne.km	18.00
P&M-059	Three wheel 80-100 kN Statis Roller	Earth or soil / GSB / WBM	cum/hour	100/60/60	hour	969.00
P&M-060	Water Tanker	Water Transport	capacity in KL	6	hour	724.00
P&M-061	Water Tanker	Water Transport	capacity in KL	6	km	77.00
P&M-062	Wet Mix Plant 60 TPH	Wet Mix	cum/hour	25	hour	1,731.00
P&M-062 (A)	Vibratory roller 8 to 10 tonne	Intermediate rolling.	cum/hour	3.9	hour	856.00

Code	Description of Machine	Unit	Rate
P&M-063	Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	723.00
P&M-064	Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	23,790.00
P&M-065	Belt conveyor system	hour	2,233.00
P&M-066	Boat to carry atleast 20 persons	hour	2,278.00
P&M-067	Cement concrete batch mix plant @ 20 cum per hour (effective output)	hour	3,770.00
P&M-068	Cement concrete batch mix plant @ 75 cum per hour	hour	5,170.00
P&M-069	Cold milling machine @ 20 cum per hour	hour	input
P&M-070	Crane 5 tonne capacity	hour	827.00
P&M-071	Crane 10 tonne capacity	hour	838.00
P&M-072	Crane 15 tonne capacity	hour	902.00
P&M-073	Crane 20 tonne capacity	hour	1,452.00
P&M-074	Crane 40 T capacity	hour	1,447.00
P&M-075	Crane with grab 0.75 cum capacity	hour	1,040.00
P&M-076	Compressor with guniting equipment along with accessories	hour	896.00
P&M-077	Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	449.00
P&M-078	Epoxy Injection gun	hour	3,723.00
P&M-079	Generator 33 KVA	hour	506.00
P&M-080	Generator 100 KVA	hour	938.00
P&M-081	Generator 250 KVA	hour	1,154.00

P&M-082	Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	input
P&M-083	Joint Cutting Machine with 2-3 blades (for rigid pavement)	hour	143.00
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	7,335.00
P&M-086	Plate compactor	hour	382.00
P&M-087	Snow blower equipment 140 HP @ 600 cum per hour	hour	input
P&M-088	Texturing machine (for rigid pavement)	hour	301.00
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	2,240.00
P&M-094	Wet Mix Plant 75 TPH	hour	1,794.00
P&M-095	Hot mix Plant -120 TPH capacity	hour	16,471.00
P&M-096	Hot mix Plant -100 TPH capacity	hour	13,681.00
P&M-097	Drum Type HMP of 60-90 TPH capacity @ 75 tonne per hour actual output	hour	10,712.00
P&M-098	Backhoe-loader	hour	2,200.00

(B) Labour			
Code	Description of Labour	Unit	Rate
L-01	Blacksmith (IInd class)	day	551.00
L-02	Blacksmith (Ist class)/ Welder/ Plumber/ Electrician	day	593.00
L-03	Blaster (Stone cutter)	day	551.00
L-04	Carpenter I Class	day	593.00
L-05	Chiseller (Head Mazdoor)	day	551.00
L-06	Driller (Jumper)	day	551.00
L-07	Diver	day	869.00
L-08	Fitter	day	593.00
L-09	Mali	day	551.00
L-10	Mason (IInd class)	day	551.00
L-11	Mason (Ist class)	day	593.00
L-12	Mate / Supervisor	day	551.00
L-13	Mazdoor	day	424.00
L-14	Mazdoor/Dresser (Semi Skilled)	day	424.00
L-15	Mazdoor/Beldar/Dresser/Sinker (Skilled)	day	508.00
L-16	Medical Officer	day	1,490.00
L-17	Operator(grouting)	day	593.00
L-18	Painter I class	day	593.00
L-19	Para medical personnel	day	869.00
L-20	Beldar	day	424.00
L-21	Coolie	day	424.00
L-21	Bhisti	day	424.00

(C) Materials			
Code	Description	Unit	Rate
M-001	Stone Boulder of size 150 mm and below at Cruser Plant	cum	956.00
M-002	Supply of quarried stone 150 - 200 mm size for Hand Broken at site	cum	923.00
M-003	Boulder with minimum size of 300 mm for Pitching at Site	cum	893.00
M-004	Coarse sand at Mixing Plant	cum	650.00
M-005	Coarse sand at Site	cum	650.00
M-006	Fine sand at Site	cum	650.00
M-007	Moorum at Site	cum	350.00
M-008	Gravel/Quarry spall at Site	Cum	300.00
M-009	Granular Material or hard murrum for GSB works at Site	Cum	500.00
M-010	Granular Material or hard murrum for GSB works at Mixing Plant	Cum	450.00
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	1,450.00

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	900.00	900.00
M-014	Close graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	880.00	880.00
M-015	Close graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	850.00	850.00
M-016	Close graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	800.00	800.00
M-017	Close graded Granular sub-base Material 9.5 mm to 2.36 mm	cum	780.00	780.00
M-018	Close graded Granular sub-base Material 4.75mm to 2.36 mm	cum	750.00	750.00
M-019	Close graded Granular sub-base Material 4.75mm to 75 micron mm	cum	720.00	720.00
M-020	Close graded Granular sub-base Material 2.36 mm	cum	700.00	700.00
M-021	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve.	cum	700.00	700.00
M-022	Coarse graded Granular sub-base Material 2.36 mm & below	cum	700.00	700.00
M-023	Coarse graded Granular sub-base Material 4.75mm to 75 micron mm	cum	720.00	720.00
M-024	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm	cum	780.00	780.00
M-025	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	800.00	800.00
M-026	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm	cum	850.00	850.00
M-027	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	850.00	850.00
M-028	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	880.00	880.00
M-029	Coarse graded Granular sub-base Material 53 mm to 26.5mm	cum	900.00	900.00
M-030	Aggregates below 5.6 mm	cum	1,300.00	1,300.00
M-031	Aggregates 22.4 mm to 2.36 mm	cum	1,020.00	1,020.00
M-032	Aggregates 22.4 mm to 5.6 mm	cum	1,590.00	1,590.00
M-033	Aggregates 45 mm to 2.8 mm	cum	790.00	790.00
M-034	Aggregates 45 mm to 22.4 mm	cum	1,010.00	1,010.00
M-035	Aggregates 53 mm to 2.8 mm	cum	850.00	850.00
M-036	Aggregates 53 mm to 22.4 mm	cum	1,010.00	1,010.00
M-037	Aggregates 63 mm to 2.8 mm	cum	820.00	820.00
M-038	Aggregates 63 mm to 45 mm	cum	980.00	980.00

M-039	Aggregates 90 mm to 45 mm	cum	950.00	950.00
M-040	Aggregates 10 mm to 5 mm	cum	1,550.00	1,550.00
M-041	Aggregates 11.2 mm to 0.09 mm	cum	1,500.00	1,500.00
M-042	Aggregates 13.2 mm to 0.09 mm	cum	1,200.00	1,200.00
M-043	Aggregates 13.2 mm to 5.6 mm	cum	1,600.00	1,600.00
M-044	Aggregates 13.2 mm to 10 mm	cum	1,580.00	1,580.00
M-045	Aggregates 20 mm to 10 mm	cum	1,850.00	1,850.00
M-046	Aggregates 25 mm to 10 mm	cum	1,860.00	1,860.00
M-047	Aggregates 19 mm to 6 mm	cum	1,600.00	1,600.00
M-048	Aggregates 37.5 mm to 19 mm	cum	1,900.00	1,900.00
M-049	Aggregates 37.5 mm to 25 mm	cum	1,910.00	1,910.00
M-050	Aggregates 6 mm nominal size	cum	1,300.00	1,300.00
M-051	Aggregates 10 mm nominal size	cum	1,800.00	1,800.00
M-052	Aggregates 13.2/12.5 mm nominal size	cum	1,820.00	1,820.00
M-053	Aggregates 20 mm nominal size	cum	1,900.00	1,900.00
M-054	Aggregates 25 mm nominal size	cum	1,920.00	1,920.00
M-055	Aggregates 40 mm nominal size	cum	1,900.00	1,900.00

Code	Description	Unit	Rate
M-056	AC pipe 100 mm dia	metre	43.00
M-057	Acrylic polymer bonding coat	litre	371.00
M-058	Alluminium Paint	litre	355.00
M-059	Aluminium alloy plate 2mm Thick	sqm	input
M-060	Aluminium alloy/galvanised steel	tonne	63,142.00
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	170.00
M-062	Aluminium studs 100 x 100 mm fitted with lense reflectors	nos	567.00
M-063	G. I Barbed wire	kg	102.00
M-064	Bearing (Cost of parts)	nos	input
M-065	Bearing (Cast steel rocker bearing assembly of 250 tonne)	nos	3,44,046.00
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	16,514.00
M-067	Bearing (Forged steel roller bearing of 250 tonne	nos	3,02,759.00
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	68,782.00
M-069	Bearing (PTFE sliding plate bearing assembly of 80 tonnes)	nos	2,06,437.00
M-070	Bearing (Supply of sliding plate bearing of 80 tonne)	nos	16,514.00
M-071	Bentonite	kg	14.00
M-072	Binding wire	kg	105.00
M-073	Bitumen (Cationic Emulsion)	tonne	55,000.00
M-074	Bitumen (60-70 grade)	tonne	58,973.00
M-075	Bitumen (80-100 grade)	tonne	57,924.00
M-076	Bitumen (Cutback)	tonne	63,348.00
M-077	Bitumen (emulsion)	tonne	55,000.00
M-078	Bitumen (modified graded)	tonne	58,000.00
M-078 (A)	Bitumen grade PMB - 40	tonne	37,030.00
M-078 (B)	Modified Bitumen Refinery produced CRMB - 60	tonne	35,116.00
M-079	Brick	each	12.00
M-080	C.I.shoes for the pile	kg	66.00

M-081	Cement	tonne	9,100.00
M-082	Cold twisted bars (HYSD Bars)	tonne	67,000.00
M-083	Collar for joints 300 mm dia	nos	143.00
M-084	Compressible Fibre Board(20mm thick)	sqm	798.00
M-085	Connectors/ Staples	each	63.00
M-086	Copper Plate(12m long x 250mmwide)	kg	850.00
M-087	Corrosion resistant Structural steel	tonne	71,000.00
M-088	Corrugated sheet, 3 mm thick, "Thrie" beam section railing	kg	71.00
M-089	Credit for excavated rock found suitable for use	cum	270.00
M-090	Curing compound	liter	59.00
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	11,591.00
M-094	Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	100 nos	1,159.00
M-095	Epoxy compound with accessories for preparing epoxy mortar	kg	257.00
M-096	Epoxy mortar	kg	input
M-097	Epoxy primer	kg	281.00
M-098	Epoxy resin-hardner mix for prime coat	kg	169.00
M-099	Flag of red color cloth 600 x 600 mm	each	69.00
M-100	Flowering Plants	each	50.00
M-101	Galvanised MS flat clamp	nos	38.00
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	191.00
M-103	Galvanised structural steel plate 200 mm wide, 6 mm thick, 24 m long	kg	228.00
M-104	Gelatin 80%	kg	166.00
M-105	Geo grids	sqm	input
M-106	Geomembrane	sqm	input
M-107	Geonets	sqm	input
M-108	Geotextile	sqm	54.00
M-109	Geotextile filter fabric	sqm	input
M-110	GI bolt 10 mm Dia	nos	44.60

M-111	Grouting pump with agitator	hour	193.00
M-112	Grass (Doob)	kg	18.00
M-113	Grass (Fine)	kg	18.00
M-114	HDPE pipes 75mm dia	metre	70.00
M-115	HDPE pipes 90mm dia	metre	input
M-116	Hedge plants	each	13.00
M-117	Helical pipes 600mm diameter	metre	1,352.00
M-118	Hot applied thermoplastic compound	litre	209.00
M-119	HTS strand	tonne	74,697.00
M-120	Joint Sealant Compound	kg	340.00
M-121	Jute netting, open weave, 2.5 cm square opening for seeding and Mulching	sqm	15.00
M-122	LDO for steam curing	litre	46.00
M-123	M.S. Clamps	nos	81.00
M-124	M.S. Clamps	kg	257.00
M-125	M.S.shoes @ 35 Kg per pile of 15 m	kg	58.00
M-126	Tor Steel bars	tonne	67,000.00
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	2,44,696.00
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	2,70,454.00
M-129	Nipples 12mm	nos	32.00
M-130	Nuts and bolts	kg	120.00
M-131	Paint	litre	450.00
M-132	Pavement Marking Paint	litre	450.00
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	150.00
M-136	Pesticide	kg	361.00
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	2.00
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	950.00
M-142	Pre-coated stone chips of 13.2 mm nominal size	cum	2,107.00
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	5,151.00
M-144	Pre-moulded asphalt filler board	sqm	71.00
M-145	Pre-packed cement based polymer concrete of strength 45 Mpa at 28 days	kg	39.00
M-146	Primer (Best Quality)	kg	207.50
M-147	Quick setting compound	kg	59.00
M-148	Random Rubble Stone	cum	605.00
M-149	RCC Pipe NP 2 heavy duty non presure pipe 1000 mm dia	metre	1,800.00
M-150	RCC Pipe NP 2 heavy duty non presure pipe 1200 mm dia	metre	2,210.00
M-151	RCC Pipe NP 2 heavy duty non presure pipe 300 mm dia	metre	490.00
M-152	Reflectorising glass beads	kg	243.00
M-153	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Copper Strips)	metre	input
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	381.00
M-158	Rivets	each	1.00
M-159	Sand bags (Cost of sand and Empty cement bag)	nos	11.00
M-160	Sapling 2 m high 25 mm dia	each	103.00
M-161	Scrap tyres of size 900 x 20	nos	150.00
M-162	Seeds	kg	354.00
M-163	Selected earth	cum	212.00
M-164	Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	32.00
M-165	Sheathing duct	metre	116.00
M-166	Shrubs	each	25.00
M-167	Sludge / Farm yard manure @ 0.18 cum per 100 sqm at site of work for turfing	cum	141.00
M-168	Sodium vapour lamp	each	2,125.00

M-169	Square Rubble Coursed Stone	cum	605.00
M-170	Steel circular hollow pole of standard specification for street lighting to mount light at 5 m height above deck level	each	6,500.00
M-171	Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	10,625.00
M-172	Steel drum 300 mm dia 1.2 m high/empty bitumen drum	nos	71.00
M-173	Steel helmet and cushion block on top of pile head during driving.	kg	212.00
M-174	Steel pipe 25 mm external dia as per IS:1239	metre	150.00
M-175	Steel pipe 50 mm external dia as per IS:1239	metre	280.00
M-176	Steel wire rope 20 mm	kg	450.00
M-177	Steel wire rope 40 mm	kg	823.00
M-178	Strip seal expansion join	metre	14,167.00
M-179	Structural Steel	tonne	50,728.00
M-180	Super plastisizer admixture IS marked as per 9103-1999	kg	64.00
M-181	Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	input
M-182	Through and bond stone	each	15.00
M-183	Tie rods 20mm diameter	nos	289.00
M-184	Tiles size 300 x 300 mm and 25 mm thick	each	input
M-185	Timber	cum	28,685.00
M-186	Traffic cones with 150 mm reflective sleeve	nos	1,545.00
M-187	Tube anchorage set complete with bearing plate, permanent wedges etc	nos	4,894.00
M-188	Unstaked lime	tonne	15,000.00
M-189	Water	KL	71.00
M-190	Water based cement paint	litre	140.00
M-191	Welded steel wire fabric	kg	69.00
M-192	Wire mesh 50mm x 50mm size of 3mm wire	kg	170.00
M-193	Wooden ballies 2" Dia for bracing	each	45.00
M-194	Wooden ballies 8" Dia and 9 m long	each	580.00
M-195	Wooden packing	cum	16,977.00
M-196	Wooden staff for fastening of flag 25 mm dia, one m long	each	71.00
M-197	Coldmix Binder	tonne	66,861.00
M-198	Paving Asphalt VG-30 of approved quality	tonne	41,549.00

M-199	Waste plastic additive	tonne	42,000.00
M-200	Dry hydrated lime (factory made)	quintal	300.00
M-201	Mirror polish granite 0.5 Sq.m Granite of any colour, 18 mm thick	sqm	1,739.00
M-202	Granite stone slab 30mm thick	sqm	1,890.00
M-203	Interlocking C.C. paver block, (60 mm thick, M-30)	sqm	420.00
M-204	Matt finished vitrified tile 100x100 x16mm	sqm	1,100.00
M-205	Vitrified tile 300x300 x9.8mm	sqm	559.50
M-206	Tactile tile 300x300 9.8mm	sqm	1,050.00
M-207	Coloured inter locking C.C. paver Block	sqm	472.50
M-208	Interlocking C.C. paver block (80 mm thick, M-30)	sqm	470.00
M-209	Sundries		2.75
M-210	Hire and running charges of mech mixer		2.75
	Lead from Mixing Plant to working site		0
	Lead for E/W borrow area to site		3
	Lead for fly ash from source to site		50
Description			Percentage of Rate
GST for Road Works 18 % (as a Multiplying factor)			0.2016
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 %
Items No.	Summary of Rates calculated and used for analysis of rates of other items	Unit	Rate
Item 8.3	Printing new letter and figures of any shade (ii) English Roman (As per Analysis Directly Used Items)	per cm height per letter	1.10
Item 8.8	Painting Two Coats on New Concrete Surfaces (---DO---)	sqm	162.00
Item 8.9	Painting angle iron post two coats (---DO---)	sqm	141.00

Item 12.6 (B)	Cement mortar 1:2 (Excluding OH & CP) (---DO---)	cum	7,105.00
Item 12.6 (A)	Cement mortar 1:3 (Excluding OH & CP) (---DO---)	cum	5,727.00
Item 12.6 (D)	Cement mortar 1:6 (Excluding OH & CP) (---DO---)	cum	3,823.00
Item 12.7 (A)	Course Rubble masonry in cement mortar 1:3 (including OH & CP) (---DO---)	cum	6,751.00
Item 12.7 (Addl) B)	Random Rubble masonry in cement mortar 1:6 (including OH & CP) (---DO---)	cum	5,605.00
Item 12.8 (A)	PCC Grade M15 including OH & CP for Open Foundation by Mixer (---DO---)	cum	9,371.00
Item 12.8 (A)	PCC Grade M15 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	5,625.00
Item 12.8 (B) PCC	PCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,090.00
Item 12.8 (C) Case I	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,103.00
Item 12.8 (C) RCC	RCC Grade M20 including OH & CP for Open Foundation by Batching Plant (---DO---)	cum	9,665.00
Item 12.8 (C) Case II	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	5,802.00
Item 12.8 (D)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,594.00
Item 12.8 (D)	PCC Grade M25 including OH & CP for Open Foundation by Batching Plant (---DO---)	cum	10,465.00
Item 12.8 (D)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,297.00
Item 12.8 (E)	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,612.00
Item 12.8 (E)	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,415.00
Item 12.8 (F) Case I	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,649.00
Item 12.8 (F) Case II	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,346.00
Item 12.8 (G)	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,643.00

Item 12.8 (G)	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,343.00
Item 12.8 (H)	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,782.00
Item 12.8 (H)	RCC Grade M35 including OH & CP for Open Foundation by Batching Plant (---DO---)	cum	6,788.00
Item 12.8 (H)	RCC Grade M35 excluding OH & CP for Open Foundation by Batching Plant (---DO---)	cum	10,874.00
Item 12.8 (H)	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,591.00
Item 12.11 (C) i	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,604.00
Item 12.11 (C) i	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,089.00
Item 12.11 (C) ii	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,884.00
Item 12.11 (C) ii	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,366.00
Item 12.11 (C) iii	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	6,938.00
Item 12.11 (C) iii	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,423.00
Item 12.11 (C) iv	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Mixer (---DO---)	cum	7,066.00
Item 12.11 (C) iv	PCC Grade M35 including OH & CP for Well Foundation (Bottom Plug) by Batching Plant (---DO---)	cum	10,965.00
Item 12.11 (C) iv	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Machinery by Batching Plant (---DO---)	cum	6,548.00
Item 12.11 (F) iv	PCC Grade M35 including OH & CP for Well Foundation (Well Cap) by Batching Plant (---DO---)	cum	10,696.00
Item No. 3.13	Excavation for Structures (Manual Means) (---DO---)	cum	524.00
Item No. 3.13	Excavation for Structures (Mechanical Meanse) (---DO---)	cum	78.00
Item 14.1(A)	RCC Grade M20 for super-structure including OH & CP by Batching Plant (---DO---)	cum	11,044.00
Item 14.1(B)	RCC Grade M20 for super-structure including OH & CP by Batching Plant (---DO---)	cum	12,071.00

Item 14.1(E)	RCC Grade M20 for super-structure including OH & CP by Batching Plant (---DO---)	cum	12,835.88
Item 14.1(C)	RCC Grade M30 for super-structure including formwork and excluding OH & CP by Batching Plant (---DO---)	cum	7,619.00
Item 14.1(C)	RCC Grade M30 for super-structure excluding formwork and excluding OH & CP by Batching Plant (---DO---)	cum	6,349.00
Item 14.2 A	Supplying ,fitting and placing HYSD bar reinforcement in super-structure exncluding OH & CP (---DO---)	tonne	76,604.00
Item 13.6	Supplying, fitting and placing HYSD including OH & CP for sub-structure (---DO---)	tonne	1,20,323.00
Item 5.17	Fog Seal (---DO---)	sqm	68.00
Item 5.21 Case-I	Crack Prevention courses. Case-I Stress Absorbing Membrane (SAM) crack width less than 6 mm (---DO---)	sqm	102.00
Item 5.21 Case-II	Crack Prevention courses. Case-II Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm (---DO---)	sqm	124.00
Item 5.21 Case-IV	Crack Prevention courses. Case-III Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 % (---DO---)	sqm	166.00
Item 5.21 Case-IV	Crack Prevention courses. Case-IV Bitumen Impregnated Geotextile (---DO---)	sqm	183.00
Item 5.15 Case-I	Slurry Seal Case-I 5 mm thickness (---DO---)	sqm	111.00
Item 5.15 Case-II	Slurry Seal Case-II 3 mm thickness (---DO---)	sqm	77.00
Item 5.15 Case-III	Slurry Seal Case III 1.5 mm thickness (---DO---)	sqm	47.00
Item 5.9 Case-I	Surface Dressing Case-I 19 mm nominal chipping size (---DO---)	sqm	156.00
Item 5.9 Case-II	Surface Dressing Case-II 13 mm nominal size chipping (---DO---)	sqm	124.00

A. Roads Works

Basic Notes for Preparation of Schedule of Rates

The basic approach for the preparation of schedule 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 accommodation, 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

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. excluding all Taxes/charges 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 m. 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 conditions.
- 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-2023 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 2023.
 - (i) Bitumen product - Near by Authorised Dealer
 - (ii) All steel items/Cement :- Tezpur/Banderdewa/North Lakhimpur/Silapathar/Dibrugarh /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.
- 7.3 The alternative proposal for crushing own aggregate by installing crusher is compared with procurement of crushed aggregates from the market and proposal found 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) Ziro lead has been considered for the stone aggregate in order to work out the actual rates 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 miscellaneous items have been added in the overhead charges.

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

10.5 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.

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 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 referred.
- 10.23 Some of major steel producing firms have evolved thermo-mechanically treated steel which has enhanced strength, better corrosion resistance, ductility, weld ability and high temperature 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 accommodation 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 overhead charges considering the following elements -

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

- (i) Site accommodation, 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-2023 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/ /Dibrugarh /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 crushing own aggregate by installing crusher is 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) Ziro lead has been considered for the stone aggregate in order to work out the actual rates of aggregates by adding the transportation cost up to the site of work.

9 General :

9.1 The clause numbers refer to 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 miscellaneous 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 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 temperature 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.
- (iii) 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 barracges 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 m to 12 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 13 Min bucket capacity @ 25 cum per hour 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 0.330 916.00 302.28 P&M-048 Front end-loader 1 cum bucket capacity hour 0.330 1838.00 606.54 P&M-017 @ 25 cum/hour b) GST (multiplying factor 0.2016) on (a) 183.22 c) Overheads @ 10 % on (a+b) 109.20 d) Contractors profit @ 10 % on (a+b+c) 120.12 e) Cess @1% on (a+b+c+d) 13.21 Cost for 5.5 cum = (a+b+c+d+e) 1334.57 Rate per cum = (a+b+c+d+e)/ 5.5 242.65 <div>say 243.00</div>					
	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 0.400 916.00 366.40 P&M-048 Time taken for empty return trip. hour 0.290 916.00 265.64 P&M-048 b) GST (multiplying factor 0.2016) on (a) 127.42 c) Overheads @ 10 % on (a+b) 75.95 d) Contractors profit @ 10 % on (a+b+c) 83.54 e) Cess @1% on (a+b+c+d) 9.19 cost for 100 t km = a+b+c+d+e 928.14 Rate per t.km = (a+b+c+d+e)/100 9.28 <div>say 9.30</div>					
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 0.500 916.00 458.00 P&M-048 Time taken for empty return trip hour 0.330 916.00 302.28 P&M-048					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		b) GST (multiplying factor 0.2016) on (a)				153.27	
		c) Overheads @ 10 % on (a+b)				91.36	
		d) Contractors profit @ 10 % on (a+b+c)				100.49	
		e) Cess @1% on (a+b+c+d)				11.05	
		Cost for 100 t.km = a+b+c+d+e				1116.45	
		Rate per t.Km = (a+b+c+d+e)/100				11.16	
					say	11.20	
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					
		l) Tipper 10 tonnes capacity					
		Time taken for onward haulage	hour	1.000	916.00	916.00	P&M-048
		Time taken for empty return trip	hour	0.670	916.00	613.72	P&M-048
		b) GST (multiplying factor 0.2016) on (a)				308.39	
		c) Overheads @ 10 % on (a+b)				183.81	
		d) Contractors profit @ 10 % on (a+b+c)				202.19	
		e) Cess @1% on (a+b+c+d)				22.24	
		Cost for 100 t.km = a+b+c+d+e				2246.35	
		Rate per t.Km = (a+b+c+d+e)/100				22.46	
					say	22.50	
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	551.00	33.06	L-12
		Mazdoor	day	1.500	424.00	636.00	L-13
		b) Material					
		Supply of quarried stone 150 - 200 mm size	cum	1.100	923.00	1015.30	M-002
		c) GST (multiplying factor 0.2016) on (a+b)				339.57	
		d) Overheads @ 10% on (a+b+c)				202.39	
		e) Contractors profit @10% on (a+b+c+d)				222.63	
		f) Cess @1% on (a+b+c+d+e)				24.49	
		Rate per cum = a+b+c+d+e+f				2473.44	
					say	2473.00	
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	551.00	418.76	L-12
		Mazdoor Skilled	day	2.000	424.00	848.00	L-14
		Mazdoor including breaking of any oversize boulder.	day	17.000	424.00	7208.00	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	956.00	764800.00	M-001

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	22887.00	137322.00	P&M-028
		Front end loader 1 cum bucket capacity	Hour	20.000	1838.00	36760.00	P&M-017
		Tipper 5.5 cum capacity	Hour	20.000	916.00	18320.00	P&M-048
		d) GST (multiplying factor 0.2016) on (a+b+c)				194680.43	
		e) Overheads @ 10 % on (a+b+c+d)				116035.72	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				127639.29	
		g) Cess @1% on (a+b+c+d+e+f)				14040.32	
		Cost for 600 cum = a+b+c+d+e+f+g				1418072.52	
		Rate per cum = (a+b+c+d+e+f+g)*0.95/600				2245.28	
					say	2245.00	
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	551.00	418.76	L-12
		Mazdoor Skilled	day	2.000	424.00	848.00	L-14
		Mazdoor including breaking of any size boulder.	day	17.000	424.00	7208.00	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800.000	956.00	764800.00	M-001
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	22887.00	137322.00	P&M-028
		Front end loader 1 cum bucket capacity	Hour	20.000	1838.00	36760.00	P&M-017
		Tipper 5.5 cum capacity	Hour	20.000	916.00	18320.00	P&M-048
		d) GST (multiplying factor 0.2016) on (a+b+c)				194680.43	
		e) Overheads @ 10 % on (a+b+c+d)				116035.72	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				127639.29	
		g) Cess @1% on (a+b+c+d+e+f)				14040.32	
		Cost for 670 cum = a+b+c+d+e+f+g				1418072.52	
		Rate per cum = (a+b+c+d+e+f+g)*0.90/670				1904.87	
					say	1905.00	
Note	1.	800 cum of stone boulders are needed to get 600 cum of stone chips of size 20 and 40 mm.					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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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	551.00	418.76	L-12
Mazdoor Skilled	day	2.000	424.00	848.00	L-14
Mazdoor	day	17.000	424.00	7208.00	L-13

b) Material

Stone Boulder of size 150 mm and below	cum	800.000	956.00	764800.00	M-001
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c) Machinery

Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	22887.00	137322.00	P&M-028
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Front end loader 1 cum bucket capacity	Hour	20.000	1838.00	36760.00	P&M-017
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Tipper 5.5 cum capacity	Hour	20.000	916.00	18320.00	P&M-048
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d) GST (multiplying factor 0.2016) on (a+b+c) 194680.43

e) Overheads @ 10 % on (a+b+c+d) 116035.72

f) Contractors profit @ 10 % on (a+b+c+d+e) 127639.29

g) Cess @1% on (a+b+c+d+e+f) 14040.32

Cost for 750 cum = (a+b+c+d+e+f+g)x0.85 1205361.64

Rate per cum = (a+b+c+d+e+f+g)x0.85/750 **1607.15**

say 1607.00

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	551.00	242.44	L-12
Mazdoor	day	9.000	424.00	3816.00	L-13
Mazdoor skilled	day	2.000	508.00	1016.00	L-15

b) Machinery

Mechanical broom @ 1250 sqm per hour	hour	7.200	473.00	3405.60	P&M-031
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DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Air compressor 250 cfm	hour	7.200	658.00	4737.60	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3640.00	21840.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	916.00	5496.00	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Bitumen pressure distributor	hour	6.000	1509.00	9054.00	P&M-004
		Smooth wheeled roller 8-10 tonne weight	hour	6.000	783.00	4698.00	P&M-044
		c) Material					
		Bitumen@ 1.20 kg per sqm	tonne	10.800	58973.00	636908.40	M-074
		Crushed stone chipping, 19 mm nominal size @ 0.015 cum per sqm	cum	135.000	1900.00	256500.00	M-053
		d) GST (multiplying factor 0.2016) on (a+b+c)				193282.40	
		e) Overheads @ 10 % on (a+b+c+d)				115202.44	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				126722.69	
		g) Cess @1% on (a+b+c+d+e+f)				13939.50	
		Cost for 9000 sqm= a+b+c+d+e+f+g				1407889.07	
		Rate per sqm = (a+b+c+d+e+f+g)/9000				156.43	
					say	<u>156.00</u>	
		Case - II 13 mm nominal size chipping					
		a) Labour					
		Mate	day	0.440	551.00	242.44	L-12
		Mazdoor	day	9.000	424.00	3816.00	L-13
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	7.200	473.00	3405.60	P&M-031
		Air compressor 250 cfm	hour	7.200	658.00	4737.60	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3640.00	21840.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	916.00	5496.00	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1509.00	9054.00	P&M-004
		Vibratory roller 8-10 tonne weight	hour	6.000	969.00	5814.00	P&M-059
		c) Material					
		Bitumen@ 1.00 kg per sqm	tonne	9.000	58973.00	530757.00	M-074
		Crushed stone chipping, 13 mm nominal size @ 0.01 cum per sqm	cum	90.000	1820.00	163800.00	M-052
		d) GST (multiplying factor 0.2016) on (a+b+c)				153418.94	
		e) Overheads @ 10 % on (a+b+c+d)				91442.56	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				100586.81	
		g) Cess @1% on (a+b+c+d+e+f)				11064.55	
		Cost for 9000 sqm= a+b+c+d+e+f+g				1117519.50	
		Rate per sqm = (a+b+c+d+e+f+g)/9000				124.17	
					say	<u>124.00</u>	

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

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		2.Input for the second coat, where required, will be the same as per the 1st coat mentioned above					
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					
	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	551.00	132.24	L-12
		Mazdoor	day	6.000	424.00	2544.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	473.00	2838.00	P&M-031
		Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1328.00	7968.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	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	916.00	5496.00	P&M-048
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1708.00	10248.00	P&M-037
		Water tanker 6 KL capacity	hour	2.000	724.00	1448.00	P&M-060
		c) Material					
		Residual Binder @ 11 % of mix 80 x 2.2 x 0.11	tonne	19.360	55000.00	1064800.00	M-077
		Fine aggregate 4.75 mm and below 87 % of total mix, 80 x 2.2 x 0.87 = 153.12 tonnes. Taking density 1.5, = 153.12/1.5 = 102.08 cum	cum	102.080	650.00	66352.00	M-005
		Filler @ 2 % of total mix = 80 x 2.2 x 0.02	tonne	3.520	15000.00	52800.00	M-188
		Cost of water	KL	12.000	71.00	852.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				248059.57	
		e) Overheads @ 10 % on (a+b+c+d)				123045.42	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				160155.92	
		g) Cess @ 1% on (a+b+c+d+e+f)				17617.15	
		Cost for 16000 sqm = a+b+c+d+e+f+g				1779332.30	
		Rate per sqm = (a+b+c+d+e+f+g)/16000				111.21	
					say	111.00	
	Case II	3 mm thickness					
		Unit = sqm					
		Taking output = 20000 sqm (60 cum)					
		a) Labour					
		Mate	day	0.200	551.00	110.20	L-12
		Mazdoor	day	5.000	424.00	2120.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	473.00	2838.00	P&M-031
		Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1328.00	7968.00	P&M-033

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	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	916.00	5496.00	P&M-048
		Water tanker 6 KL capacity	hour	2.000	724.00	1448.00	P&M-060
		c) Material					
		Residual Binder @ 13 % of mix = 60 x 2.2 x 0.13	tonne	17.160	55000.00	943800.00	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	650.00	48620.00	M-005
		Filler @ 2 % of total mix = 60x 2.2 x 0.02	tonne	2.640	15000.00	39600.00	M-188
		Cost of water	KL	12.000	71.00	852.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				215274.17	
		e) Overheads @ 10 % on (a+b+c+d)				106782.82	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				138988.52	
		g) Cess @1% on (a+b+c+d+e+f)				15288.74	
		Cost for 30000 sqm = a+b+c+d+e+f+g				1544162.45	
		Rate per sqm = (a+b+c+d+e+f+g)/20000				77.21	
					say	<u>77.00</u>	
Case III		1.5 mm thickness					
		Unit = sqm					
		Taking output = 24000 sqm (36 cum)					
		a) Labour					
		Mate	day	0.200	551.00	110.20	L-12
		Mazdoor	day	5.000	424.00	2120.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	473.00	2838.00	P&M-031
		Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1328.00	7968.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	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	916.00	5496.00	P&M-048
		Water tanker 6 KL capacity	hour	2.000	724.00	1448.00	P&M-060
		c) Material					
		Residual Binder @ 16 % of mix, 36 x 2.2 x 0.16	tonne	12.670	55000.00	696850.00	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	700.00	30310.00	M-022
		Filler @ 2 % of total mix = 36x 2.2 x 0.02	tonne	1.580	15000.00	23700.00	M-188
		Cost of water	KL	12.000	71.00	852.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				158592.31	
		e) Overheads @ 10 % on (a+b+c+d)				78666.82	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				102392.73	
		g) Cess @1% on (a+b+c+d+e+f)				11263.20	
		Cost for 24000 sqm = a+b+c+d+e+f+g				1137583.26	
		Rate per sqm = (a+b+c+d+e+f+g)/24000				47.40	
					say	<u>47.00</u>	

Note 1. Tack coat, if required to be provided, before laying slurry seal may be measured and paid separately

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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 0.120 551.00 66.12 L-12 Mazdoor day 3.000 424.00 1272.00 L-13 b) Machinery Mechanical broom @ 1250 sqm per hour hour 6.000 473.00 2838.00 P&M-031 Air compressor 250 cfm hour 6.000 658.00 3948.00 P&M-001 Bitumen emulsion pressure distributor @ 1750 sqm per hour tonne 6.000 1509.00 9054.00 P&M-004 c) Material Bitumen emulsion @ 0.75 kg per sqm tonne 7.880 55000.00 433400.00 M-077 d) GST (multiplying factor 0.2016) on (a+b+c) 90836.55 e) Overheads @ 10 % on (a+b+c+d) 45057.81 f) Contractors profit @ 10 % on (a+b+c+d+e) 58647.25 g) Cess @1% on (a+b+c+d+e+f) 6451.20 Cost for 10500 sqm= a+b+c+d+e+f+g 651570.93 Rate per sqm = (a+b+c+d+e+f+g)/10500 62.05 say 62.00 1.In case it is decided by the engineer to blind the fog spray, the following may be added a) Labour Mate day 0.160 551.00 88.16 L-12 Mazdoor for precoating of grit day 4.000 424.00 1696.00 L-13 c) Material Crushed stone grit 3 mm size @ 3.75 kg per sqm cum 26.250 780.00 20475.00 M-024 Bitumen emulsion for precoating grit @ 2 % of grit, 39.38 x 0.02 tonne 0.790 55000.00 43450.00 M-077 65709.16 6.26 say 6.00					
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 0.240 551.00 132.24 L-12 Mazdoor day 6.000 424.00 2544.00 L-13 b) Machinery Mechanical broom @ 1250 sqm per hour hour 6.000 473.00 2838.00 P&M-031 Air compressor 250 cfm hour 6.000 658.00 3948.00 P&M-001 Bitumen pressure distributor @ 1750 sqm per hour hour 6.000 1509.00 9054.00 P&M-004					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Hydraulic Chip spreader	hour	6.000	3640.00	21840.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	783.00	4698.00	P&M-044
		c) Material					
		Modified binder	tonne	9.450	58000.00	548100.00	M-078
		Crushed stone aggregates 5.6 mm size	cum	105.000	1300.00	136500.00	M-050
		d) GST (multiplying factor 0.2016) on (a+b+c)				147098.29	
		e) Overheads @ 10 % on (a+b+c+d)				87675.25	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				96442.78	
		g) Cess @1% on (a+b+c+d+e+f)				10608.71	
		Cost for 10500 sqm= a+b+c+d+e+f+g				1071479.27	
		Rate per sqm = (a+b+c+d+e+f+g)/10500				102.05	
					say	<u>102.00</u>	

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	551.00	132.24	L-12
Mazdoor	day	6.000	424.00	2544.00	L-13
b) Machinery					
Mechanical broom @ 1250 sqm per hour	hour	6.000	473.00	2838.00	P&M-031
Air compressor 250 cfem capacity	hour	6.000	658.00	3948.00	P&M-001
Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1509.00	9054.00	P&M-004
Hydraulic Chip spreader	hour	6.000	3640.00	21840.00	P&M-025
Smooth wheeled road roller 8-10 tonne	hour	6.000	783.00	4698.00	P&M-044
c) Material					
Modified binder	tonne	11.550	58000.00	669900.00	M-078
Crushed stone chipping 11.2 mm size	cum	105.000	1800.00	189000.00	M-051
d) GST (multiplying factor 0.2016) on (a+b+c)				182237.17	
e) Overheads @ 10 % on (a+b+c+d)				90395.42	
f) Contractors profit @ 10 % on (a+b+c+d+e)				117658.68	
g) Cess @1% on (a+b+c+d+e+f)				12942.46	
Cost for 10500 sqm= a+b+c+d+e+f+g				1307187.97	
Rate per sqm = (a+b+c+d+e+f+g)/10500				124.49	
				say	124.00

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

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Taking output = 10500 sqm					
		a) Labour					
		Mate	day	0.240	551.00	132.24	L-12
		Mazdoor	day	6.000	424.00	2544.00	L-13
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	473.00	2838.00	P&M-031
		Air compressor 250 cfem capacity	hour	6.000	658.00	3948.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1509.00	9054.00	P&M-004
		Hydraulic Chip spreader	hour	6.000	3640.00	21840.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	783.00	4698.00	P&M-044
		c) Material					
		Modified binder	tonne	15.750	58000.00	913500.00	M-078
		Crushed stone aggregates 11.2 mm size	cum	126.000	1800.00	226800.00	M-051
		d) GST (multiplying factor 0.2016) on (a+b+c)					239172.24
		e) Overheads @ 10 % on (a+b+c+d)					142554.25
		f) Contractors profit @ 10 % on (a+b+c+d+e)					156809.67
		g) Cess @1% on (a+b+c+d+e+f)					17249.06
		Cost for 10500 sqm= a+b+c+d+e+f+g					1742155.46
		Rate per sqm = (a+b+c+d+e+f+g)/10500					165.92
					say	166.00	

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	551.00	308.56	L-12
Mazdoor	day	12.000	424.00	5088.00	L-13
Mazdoor skilled	day	2.000	508.00	1016.00	L-15

b) Machinery

Mechanical broom @ 1250 sqm per hour	hour	2.800	473.00	1324.40	P&M-031
Air compressor 250 cfem capacity	hour	2.800	658.00	1842.40	P&M-001
Bitumen pressure distributor @ 1750 sqm per hour	tonne	2.000	1509.00	3018.00	P&M-004
Pneumatic roller	hour	2.000	1708.00	3416.00	P&M-037

c) Material

Paving grade bitumen of 80 - 100 penetration @ 1.05 kg per sqm	tonne	3.680	57924.00	213160.32	M-075
Geotextile including 10 % for overlaps	sqm	3850.000	54.00	207900.00	M-108

d) GST (multiplying factor 0.2016) on (a+b+c)

88114.05

e) Overheads @ 10 % on (a+b+c+d)

52518.77

f) Contractors profit @ 10 % on (a+b+c+d+e)

57770.65

g) Cess @1% on (a+b+c+d+e+f)

6354.77

Cost for 10500 sqm= a+b+c+d+e+f+g

641831.92

Rate per sqm = (a+b+c+d+e+f+g)/3500

183.38

say

183.00

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
	NOTE	As bitumen overlay construction shall follow 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 wide carriageway. This can be conveniently overlaid by a bituminous 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	551.00	38.57	
		Painter 1st class	day	1.25	593.00	741.25	
		Mazdoor	day	0.50	424.00	212.00	
		b) Material					
		Paint	Litre	0.50	450.00	225.00	
		c) GST (multiplying factor 0.2016) on (a+b)					245.31
		d) Overheads @ 10 % on (a+b+c)					146.21
		e) Contractors profit @ 10 % on (a+b+c+d)					160.83
		f) Cess @1% on (a+b+c+d+e)					17.69
		Cost for 1600 cm = a+b+c+d+e+f					1786.86
		Rate per cm height per letter = (a+b+c+d+e+f)/1600					1.12
					say	1.10	
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	551.00	66.12	
		Painter	day	2.00	593.00	1186.00	
		Mazdoor	day	1.00	424.00	424.00	
		b) Material					
		Paint conforming to requirement of clause 803.3.	Litre	6.00	450.00	2700.00	
		Add for scaffolding @ 1% of labour cost where required					27.00
		c) GST (multiplying factor 0.2016) on (a+b)					887.67
		d) Overheads @ 10 % on (a+b+c)					529.08
		e) Contractors profit @ 10 % on (a+b+c+d)					581.99
		f) Cess @1% on (a+b+c+d+e)					64.02
		Cost for 40 sqm = a+b+c+d+e+f					6465.88
		Rate per sqm = (a+b+c+d+e+f)/40					161.65
					say	162.00	
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	0.03	551.00	16.53	
		Painter	day	0.45	593.00	266.85	
		Mazdoor	day	0.25	424.00	106.00	
		b) Material					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Paint ready mixed approved brand.	Litre	1.25	450.00	562.50	
		Add @ 1% on cost of material for scaffolding				5.63	
		c) GST (multiplying factor 0.2016) on (a+b)				193.03	
		d) Overheads @ 10 % on (a+b+c)				115.05	
		e) Contractors profit @ 10 % on (a+b+c+d)				126.56	
		f) Cess @1% on (a+b+c+d+e)				13.92	
		Cost for 10 sqm = a+b+c+d+e+f				1406.07	
		Rate per sqm = (a+b+c+d+e+f)/10				140.61	
					say	141.00	
12.6	Sub-analysis (A)	Cement mortar1:3 (1cement :3 sand)					
		Unit = 1 cum					
		Taking output = 1 cum					
		a) Materials					
		Cement	MT	0.51	9100.00	4641.00	
		Sand	cum	1.05	650.00	682.50	
		b) Labour					
		Mate	day	0.04	551.00	22.04	
		Mazdoor	day	0.90	424.00	381.60	
		Total Material and Labour = (a+b)				5727.00	
	Sub-analysis (B)	Cement mortar1:2 (1cement :2 sand)					
		Unit = 1 cum					
		Taking output = 1 cum					
		a) Materials					
		Cement	MT	0.67	9100.00	6097.00	
		Sand	cum	0.93	650.00	604.50	
		b) Labour					
		Mate	day	0.04	551.00	22.04	
		Mazdoor	day	0.90	424.00	381.60	
		Total Material and Labour = (a+b)				7105.00	
	Sub-analysis (D)	Cement mortar1:6 (1cement :6 sand)					
		Unit = 1 cum					
		Taking output = 1 cum					
		a) Materials					
		Cement	MT	0.29	9100.00	2639.00	
		Sand	cum	1.20	650.00	780.00	
		b) Labour					
		Mate	day	0.04	551.00	22.04	
		Mazdoor	day	0.90	424.00	381.60	
		Total Material and Labour = (a+b)				3823.00	
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					
	(A)	Square Rubble Coursed Rubble Masonry (first sort)					
		a) Material					
		Stone	cum	5.50	605.00	3327.50	M-169
		Through and bond stone	each	35.00	15.00	525.00	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	5727.00	8590.50	Item 12.6 (A)
		b) Labour					
		Mate	day	0.66	551.00	363.66	L-12

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Mason	day	7.50	593.00	4447.50	L-11
		Mazdoor	day	9.00	424.00	3816.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				4247.74	
		d) Overhead charges @ 20 % on (a+b+c)				5063.58	
		e) Contractors profit @ 10 % on (a+b+c+d)				3038.15	
		f) Cess @1% on (a+b+c+d+e)				334.20	
		Cost for 5 cum = a+b+c+d+e+f				33753.83	
		Rate per cum (a+b+c+d+e+f)/5				6750.77	
					say	<u>6751.00</u>	
1405.3		B) Random Rubble Masonry (coursed/uncoursed) Unit = cum Taking output = 5 cum					
		a) Material					
		Stone	cum	5.50	605.00	3327.50	
		Through and bond stone (35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)	Nos	35.00	15.00	525.00	
		Cement mortar 1:3 (Rate as in item 12.6 A)	cum	1.55	5727.00	8876.85	
		b) Labour					
		Mate	day	0.62	551.00	341.62	
		Mason	day	6.00	593.00	3558.00	
		Mazdoor	day	9.00	424.00	3816.00	
		c) GST (multiplying factor 0.2016) on (a+b)				4121.71	
		d) Overheads @ 20 % on (a+b+c)				4913.34	
		e) Contractors profit @ 10 % on (a+b+c+d)				2948.00	
		f) Cess @1% on (a+b+c+d+e)				324.28	
		Cost for 5 cum = a+b+c+d+e+f				32752.30	
		Rate per cum (a+b+c+d+e+f)/5				6550.46	
					say	<u>6550.00</u>	
		@ 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	605.00	3327.50	
		Through and bond stone (35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)	Nos	35.00	15.00	525.00	
		Cement mortar 1:3 (Rate as in item 13.6 D)	cum	1.55	3823.00	5925.65	
		b) Labour					
		Mate	day	0.62	551.00	341.62	
		Mason	day	6.00	593.00	3558.00	
		Mazdoor	day	9.00	424.00	3816.00	
		c) GST (multiplying factor 0.2016) on (a+b)				3526.74	
		d) Overheads @ 20 % on (a+b+c)				4204.10	
		e) Contractors profit @ 10 % on (a+b+c+d)				2522.46	
		f) Cess @1% on (a+b+c+d+e)				277.47	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Cost for 5 cum = a+b+c+d+e+f				28024.54	
		Rate per cum (a+b+c+d+e+f)/5				5604.91	
					say	<u>5605.00</u>	
	@	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	9100.00	37583.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		40 mm Aggregate	cum	8.10	1900.00	15390.00	
		20 mm Aggregate	cum	4.05	1900.00	7695.00	
		10 mm Aggregate	cum	1.35	1800.00	2430.00	
		b) Labour					
		Mate	day	0.86	551.00	473.86	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 63 KVA	hour	6.00	883.00	5298.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			5,625.00		
		d) Formwork @ 4% on cost of concrete i.e.cost of material, labour and machinery				3374.91	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				17689.95	
		f) Overheads @ 20 % on (a+b+c+d+e)				21087.54	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				12652.53	
		h) Cess @1% on (a+b+c+d+e+f+g)				1391.78	
		Cost for 15 cum = a+b+c+d+e+f+g+h				140569.57	
		Rate per cum (a+b+c+d+e+f+g+h)/15				9371.30	
					say	<u>9371.00</u>	
	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					
		a) Material					
		Cement	MT	5.16	9100.00	46956.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		40 mm Aggregate	cum	5.40	1900.00	10260.00	
		20 mm Aggregate	cum	5.40	1900.00	10260.00	
		10 mm Aggregate	cum	2.70	1800.00	4860.00	
		b) Labour					
		Mate	day	0.86	551.00	473.86	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	

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	506.00	3036.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,090.00			
12.8	C	RCC Grade M20					
		Unit = cum					
	Case I	Using concrete mixer					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	5.21	9100.00	47411.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		20 mm Aggregate	cum	8.10	1900.00	15390.00	
		10 mm Aggregate	cum	5.40	1800.00	9720.00	
		b) Labour					
		Mate	day	0.86	551.00	473.86	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,103.00			
	Case II	With Batching Plant, Transit Mixer and Concrete Pump					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	41.66	9100.00	379106.00	
		Coarse Sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		b) Labour					
		Mate	day	0.84	551.00	462.84	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity	hour	6.00	1838.00	11028.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Lead beyond 1 km, L-lead in km	T-km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6	2726.00	16356.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		5,802.00			
		d) Formwork @ 4% on cost of concrete i.e. cost of material, labour and machinery				27845.87	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				145956.93	
		f) Overheads @ 20 % on (a+b+c+d+e)				173989.93	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				104393.96	
		h) Cess @1% on (a+b+c+d+e+f+g)				11483.34	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1159816.87	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				9665.14	
					say	9665.00	
12.8	D	PCC Grade M25					
		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.
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Taking output = 15 cum

a) Material

Cement	MT	5.99	9100.00	54509.00
Coarse sand	cum	6.75	650.00	4387.50
40 mm Aggregate	cum	5.40	1900.00	10260.00
20 mm Aggregate	cum	5.40	1900.00	10260.00
10 mm Aggregate	cum	2.70	1800.00	4860.00

b) Labour

Mate	day	0.86	551.00	473.86
Mason	day	1.50	593.00	889.50
Mazdoor	day	20.00	424.00	8480.00

c) Machinery

Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00
Generator 33 KVA	hour	6.00	506.00	3036.00

Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) **6,594.00**

Case II **With Batching Plant, Transit Mixer and Concrete Pump**

Unit : cum

Taking Output = 120 cum

a) Material

Cement	MT	47.95	9100.00	436345.00
Coarse sand	cum	54.00	650.00	35100.00
40 mm Aggregate	cum	43.20	1900.00	82080.00
20 mm Aggregate	cum	43.20	1900.00	82080.00
10 mm Aggregate	cum	21.60	1800.00	38880.00

b) Labour

Mate	day	0.84	551.00	462.84
Mason	day	3.00	593.00	1779.00
Mazdoor	day	18.00	424.00	7632.00

c) Machinery

Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00
Generator 100 KVA	hour	6.00	938.00	5628.00
Loader 1 cum capacity	hour	6.00	1838.00	11028.00
Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00
Transit Mixer 4 cum capacity lead	T-Km	300L	80.00	0.00
Concrete Pump	hour	6	2726.00	16356.00

Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) **6,297.00**

d) Formwork @ 3.75% of cost of concrete i.e. cost of material, labour and machinery 28332.97

e) GST (multiplying factor 0.2016) on (a+b+c+d) 158029.97

f) Overheads @ 20 % on (a+b+c+d+e) 188381.76

g) Contractors profit @ 10 % on (a+b+c+d+e+f) 113029.05

h) Cess @1% on (a+b+c+d+e+f+g) 12433.20

Cost for 120 cum = a+b+c+d+e+f+g+h 1255752.79

Rate per cum = (a+b+c+d+e+f+g+h)/120 10464.61

say 10465.00

12.8 E RCC Grade M25

Unit = cum

Case I **Using concrete Mixer**

Taking output = 15 cum

a) Material

Cement	MT	6.05	9100.00	55055.00
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DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Coarse sand	cum	6.75	650.00	4387.50	
		20 mm Aggregate	cum	8.10	1900.00	15390.00	
		10 mm Aggregate	cum	5.40	1800.00	9720.00	
		b) Labour					
		Mate	day	0.86	551.00	473.86	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,612.00			
Case II		With Batching Plant, Transit Mixer and Concrete Pump					
		Unit : cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	48.38	9100.00	440258.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		Admixer	Kg	193.52	64.00	12385.28	
		b) Labour					
		Mate	day	0.84	551.00	462.84	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity 1 cum	hour	6.00	1838.00	11028.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,415.00			
12.8	F	PCC Grade M30					
		Unit = cum					
Case I		Using Concrete Mixer					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.08	9100.00	55328.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		40 mm Aggregate	cum	5.40	1900.00	10260.00	
		20 mm Aggregate	cum	5.40	1900.00	10260.00	
		10 mm Aggregate	cum	2.70	1800.00	4860.00	
		b) Labour					
		Mate	day	0.86	551.00	473.86	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,649.00			
Case II		Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit : cum					

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	48.60	9100.00	442260.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		40 mm Aggregate	cum	43.20	1900.00	82080.00	
		20 mm Aggregate	cum	43.20	1900.00	82080.00	
		10 mm Aggregate	cum	21.60	1800.00	38880.00	
		b) Labour					
		Mate	day	0.84	551.00	462.84	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity	hour	6.00	1838.00	11028.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,346.00			
12.8	G	RCC Grade M30					
	Case I	Using Concrete Mixer					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.10	9100.00	55510.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		20 mm Aggregate	cum	8.10	1900.00	15390.00	
		10 mm Aggregate	cum	5.40	1800.00	9720.00	
		b) Labour					
		Mate	day	0.86	551.00	473.86	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,643.00			
	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	48.80	9100.00	444080.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		b) Labour					
		Mate	day	0.84	551.00	462.84	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity	hour	6.00	1838.00	11028.00	

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 for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Transit Mixer 4 cum capacity lead beyond	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,343.00			
12.8	H	RCC Grade M35					
	Case I	Using Concrete Mixer					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.33	9100.00	57603.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		20 mm Aggregate	cum	8.10	1900.00	15390.00	
		10 mm Aggregate	cum	5.40	1800.00	9720.00	
		b) Labour					
		Mate	day	0.86	551.00	473.86	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,782.00			
	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit ; cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	50.64	9100.00	460824.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		Admixer	Kg	202.56	64.00	12963.84	
		b) Labour					
		Mate	day	0.84	551.00	462.84	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity	hour	6.00	1838.00	11028.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6,591.00			
		d) Formwork @ 3% on cost of concrete i.e. cost of material, labour and machinery				23724.86	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				164213.99	
		f) Overheads @ 20 % on (a+b+c+d+e)				195753.51	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				117452.10	
		h) Cess @1% on (a+b+c+d+e+f+g)				12919.73	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1304892.87	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				10874.11	
					say	<u>10874.00</u>	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Rate per cum (a+b+c+d)/120				6788.00	
		Excluding GST, OH,CP & Cess					
	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	9100.00	50505.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		40 mm Aggregate	cum	5.40	1900.00	10260.00	
		20 mm Aggregate	cum	5.40	1900.00	10260.00	
		10 mm Aggregate	cum	2.70	1800.00	4860.00	
		Admixer	Kg	18.60	64.00	1190.40	
		b) Labour					
		Mate	day	0.90	551.00	495.90	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	490.00	2940.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			6604.00		
	Note	10% extra cement may be added where under water concreting is involved.					
	Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump					
		Unit ; cum					
		Taking Output = 120 cum					
		a) Material					
		Cement	MT	44.40	9100.00	404040.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		Admixer	Kg	148.80	64.00	9523.20	
		b) Labour					
		Mate	day	0.88	551.00	484.88	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity	hour	6.00	1838.00	11028.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	

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 & Machinery (a+b+c)		6089.00			
(ii)		PCC Grade M25					
Case I		Using Concrete Mixer					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	5.99	9100.00	54509.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		40 mm Aggregate	cum	5.40	1900.00	10260.00	
		20 mm Aggregate	cum	5.40	1900.00	10260.00	
		10 mm Aggregate	cum	2.70	1800.00	4860.00	
		Admixer	Kg	21.60	64.00	1382.40	
		b) Labour					
		Mate	day	0.90	551.00	495.90	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	490.00	2940.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6884.00			
Case II		Using Batching Plant, Transit Mixer and Crane/concrete pump					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	47.88	9100.00	435708.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		Admixer	Kg	172.80	64.00	11059.20	
		b) Labour					
		Mate	day	0.88	551.00	484.88	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity	hour	6.00	1838.00	11028.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6366.00			
(iii)		PCC Grade M30					
Case I		Using Concrete Mixer					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.08	9100.00	55328.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		40 mm Aggregate	cum	5.40	1900.00	10260.00	
		20 mm Aggregate	cum	5.40	1900.00	10260.00	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		10 mm Aggregate	cum	2.70	1800.00	4860.00	
		Admixer	Kg	21.60	64.00	1382.40	
		b) Labour					
		Mate	day	0.90	551.00	495.90	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	490.00	2940.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6938.00			
Case II		Using Batching Plant, Transit Mixer and Crane/concrete pump					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	48.64	9100.00	442624.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		Admixer	Kg	172.80	64.00	11059.20	
		b) Labour					
		Mate	day	0.88	551.00	484.88	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity	hour	6.00	1838.00	11028.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6423.00			
(iv)		PCC Grade M35					
Case I		Using Concrete Mixer					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.29	9100.00	57239.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		40 mm Aggregate	cum	5.40	1900.00	10260.00	
		20 mm Aggregate	cum	5.40	1900.00	10260.00	
		10 mm Aggregate	cum	2.70	1800.00	4860.00	
		Admixer	Kg	21.60	64.00	1382.40	
		b) Labour					
		Mate	day	0.90	551.00	495.90	
		Mason	day	1.50	593.00	889.50	
		Mazdoor	day	20.00	424.00	8480.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	490.00	2940.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		7066.00			

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	50.28	9100.00	457548.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		Admixer	Kg	172.80	64.00	11059.20	
		b) Labour					
		Mate	day	0.88	551.00	484.88	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader 1 cum capacity	hour	6.00	1838.00	11028.00	
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			6548.00		
		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..				35724.15	
		d) GST (multiplying factor 0.2016) on (a+b+c)				165593.08	
		e) Overheads @ 20 % on (a+b+c+d)				197397.46	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				118438.48	
		g) Cess @1% on (a+b+c+d+e+f)				13028.23	
		Cost for 120 cum = a+b+c+d+e+f+g				1315851.48	
		Rate per cum = (a+b+c+d+e+f+g)/120				10965.43	
					Say	<u>10965.00</u>	
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	9100.00	460824.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		b) Labour					
		Mate	day	0.84	551.00	462.84	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader(capacity 1 cum)	hour	6.00	1838.00	11028.00	
		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 for lead upto 1 km.	hour	15.00	1265.00	18975.00	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Formwork @ 3% of (a+b+c)				23335.95	
		d) GST (multiplying factor 0.2016) on (a+b+c)				161522.08	
		e) Overheads @ 20 % on (a+b+c+d)				192544.57	
		f) Contractors profit @ 10 % on (a+b+c+d+e)				115526.74	
		g) Cess @1% on (a+b+c+d+e+f)				12707.94	
		Cost for 120 cum = a+b+c+d+e+f+g				1283502.12	
		Rate per cum = (a+b+c+d+e+f+g)/120				10695.85	
					Say	<u>10696.00</u>	

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

a) Labour

Mate	day	0.320	551.00	176.32	L-12
Mazdoor	day	8.000	424.00	3392.00	L-13

b) GST (multiplying factor 0.2016) on (a)

719.37

c) Overheads @ 10 % on (a+b)

428.77

d) Contractors profit @ 10 % on (a+b+c)

471.65

e) Cess @1% on (a+b+c+d)

51.88

Cost for 10 cum = a+b+c+d+e

5239.99

Rate per cum = (a+b+c+d+e)/10

524.00

say

524.00

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	551	176.32	
Mazdoor	day	8.00	424	3392.00	

b) Machinery

Hydraulic excavator 1.0 cum bucket capac	hour	6.00	2044	12264.00	
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c) GST (multiplying factor 0.2016) on (a+b)

3191.80

d) Overheads @ 10 % on (a+b+c)

1902.41

e) Contractors profit @ 10 % on (a+b+c+d)

2092.65

f) Cess @1% on (a+b+c+d+e)

230.19

Cost for 300 cum = a+b+c+d+e+f

23249.37

Rate per cum = (a+b+c+d+e+f)/300

77.50

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
					<u>say</u>	<u>78.00</u>	
		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	67000.00	70350.00	
		Binding wire	kg	6.00	105.00	630.00	
		b) Labour for cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.34	551.00	187.34	
		Blacksmith	day	2.00	593.00	1186.00	
		Mazdoor	day	6.50	424.00	2756.00	
		c) GST (multiplying factor 0.2016) on (a+b)				15142.04	
		d) Overheads @ 20 % on (a+b+c)				18050.28	
		e) Contractors profit @ 10 % on (a+b+c+d)				10830.17	
		f) Cess @1% on (a+b+c+d+e)				1191.32	
		Rate for per MT (a+b+c+d+e+f)				120323.15	
					<u>say</u>	<u>120323.00</u>	
14.1	1500 & 1600 1700 A	Furnishing and Placing Reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specification					
	Case II	RCC Grade M20					
		Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit = cum					
		Taking output = 120 cum					
		a) Material					
		Cement	MT	40.92	9100.00	372372.00	
		Coarse sand	cum	54.00	650.00	35100.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		b) Labour					
		Mate	day	0.84	551.00	462.84	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader	hour	6.00	1838.00	11028.00	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1265.00	18975.00	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum			689413.00		
	(i)	For solid slab super-structure, 20-30% of (a+b+c)					
	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				689413.00	

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)				137882.60	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				166782.79	
		f) Overheads @ 20 % on (a+b+c+d+e)				198815.68	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				119289.41	
		h) Cess @1% on (a+b+c+d+e+f+g)				13121.83	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1325305.31	
		Rate per cum (a+b+c+d+e+f+g+h)/120				11044.21	
					say	11044.00	
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	9100.00	436345.00	
		Coarse sand	cum	54.20	650.00	35230.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		b) Labour					
		Mate	day	0.84	551.00	462.84	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	18.00	424.00	7632.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader	hour	6.00	1838.00	11028.00	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1265.00	18975.00	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum			753516.00		
		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 & Machinery (a+b+c) for 120 cum				753516.00	
		d) Formwork and staging 20 % of (a+b+c)				150703.20	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				182290.59	
		f) Overheads @ 20 % on (a+b+c+d+e)				217301.96	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				130381.18	
		h) Cess @1% on (a+b+c+d+e+f+g)				14341.93	
		Cost for 120 cum= a+b+c+d+e+f+g+h				1448534.86	
		Rate per cum (a+b+c+d+e+f+g+h)/120				12071.12	
					say	12071.00	
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	9100.00	443989.00	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Coarse sand	cum	54.60	650.00	35490.00	
		20 mm Aggregate	cum	64.80	1900.00	123120.00	
		10 mm Aggregate	cum	43.20	1800.00	77760.00	
		b) Labour					
		Mate	day	0.88	551.00	484.88	
		Mason	day	3.00	593.00	1779.00	
		Mazdoor	day	19.00	424.00	8056.00	
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	
		Generator 100 KVA	hour	6.00	938.00	5628.00	
		Loader	hour	6.00	1838.00	11028.00	
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1265.00	18975.00	
		Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
		Concrete Pump	hour	6.00	2726.00	16356.00	
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum			761866.00		
		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 & Machinery (a+b+c) for 120 cum				761866.00	
		d) Formwork and staging 20 % of (a+b+c)				152373.20	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				184310.62	
		f) Overheads @ 20 % on (a+b+c+d+e)				219709.96	
		g) Contractors profit @ 10 % on (a+b+c+d+e+f)				131825.98	
		h) Cess @1% on (a+b+c+d+e+f+g)				14500.86	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1464586.62	
		Rate per cum (a+b+c+d+e+f+g+h)/120				12204.89	
					say	<u>12205.00</u>	
		Rate per cum (a+b+c+d)/120 (including formwork and excluding GST, OH, CP & Cess)				<u>7619.00</u>	
		Rate per cum (a+b+c+d)/120 (excluding formwork and excluding GST, OH, CP & Cess)				<u>6349.00</u>	
E		PSC Grade M-40					
Case 1		Using concret mixer.					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	MT	6.45	9100.00	58695.00	
		Coarse sand	cum	6.75	650.00	4387.50	
		20 mm Aggregate	cum	8.10	1900.00	15390.00	
		10 mm Aggregate	cum	5.40	1800.00	9720.00	
		Admixture @ 0.4% of cement	kg	25.80	64.00	1651.20	
		b) Labour					
		Mate	day	0.96	551.00	528.96	
		Mason	day	2.00	593.00	1186.00	
		Mazdoor	day	22.00	424.00	9328.00	
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	291.00	1746.00	
		Generator 33 KVA	hour	6.00	506.00	3036.00	

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum **105669.00**

Case II **Using Batching Plant, Transit Mixer and Concrete Pump**

Unit = cum

Taking output = 120 cum

a) Material

Cement	MT	51.60	9100.00	469560.00
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Coarse sand	cum	54.00	650.00	35100.00
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20 mm Aggregate	cum	64.80	1900.00	123120.00
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10 mm Aggregate	cum	43.20	1800.00	77760.00
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Admixture @ 0.4% of cement	kg	206.40	64.00	13209.60
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Admixer	Kg	216.00	64.00	13824.00
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b) Labour

Mate	day	0.94	551.00	517.94
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Mason	day	3.50	593.00	2075.50
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Mazdoor	day	20.00	424.00	8480.00
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c) Machinery

Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00
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Generator 100 KVA	hour	6.00	938.00	5628.00
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Loader	hour	6.00	1838.00	11028.00
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Transit Mixer (capacity 4.0 cu.m)

Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1265.00	18975.00
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Lead beyond 1 Km, L - lead in Kilometer	T-Km	300L	80.00	0.00	L= 0
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Concrete Pump	hour	6.00	2726.00	16356.00
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Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum **814835.00**

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 & Machinery (a+b+c) for 120 cum		814835.00
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d) Formwork and staging 18 % of (a+b+c)	146670.30
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e) GST (multiplying factor 0.2016) on (a+b+c+d)	193839.47
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f) Overheads @ 20 % on (a+b+c+d+e)	231068.95
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g) Contractors profit @ 10 % on (a+b+c+d+e+f)	138641.37
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h) Cess @1% on (a+b+c+d+e+f+g)	15250.55
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Cost for 120 cum= a+b+c+d+e+f	1540305.64
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Rate per cum (a+b+c+d+e+f)/120	12835.88
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say 12836.00

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.

DIRECTLY USED ITEMS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
14.2	1600	A) Supplying ,fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications					
		<i>Unit = 1 MT</i>					
		<i>Taking output = 1 MT</i>					
		a) Material					
		HYSD bars including 5% for laps and wast	MT	1.05	67000.00	70350.00	
		Binding wire	Kg	8.00	105.00	840.00	
		b) Labour for cutting, bending, tying and placing in position					
		Mate	day	0.44	551.00	242.44	
		Blacksmith	day	3.00	593.00	1779.00	
		Mazdoor	day	8.00	424.00	3392.00	
		Per Cum Basic Cost of Labour,				76604.00	
		Material & Mechinery (a+b+c)					
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.03	551.00	16.53	L-12
		Painter	day	0.45	593.00	266.85	L-18
		Mazdoor	day	0.25	424.00	106.00	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 (multiplying factor 0.2016) on (a+b)					124.31
		d) Overheads @ 10 % on (a+b+c)					74.09
		e) Contractors profit @ 10 % on (a+b+c+d)					81.50
		f) Cess @1% on (a+b+c+d+e)					8.97
		Cost for 10 sqm = a+b+c+d+e+f					905.50
		Rate per sqm (a+b+c+d+e+f)/10					90.55
							say
							<u>91.00</u>

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/ 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 <i>Unit = cum</i> <i>Taking output = 5.5 cum</i> 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 0.330 916.00 302.28 P&M-048 Front end-loader 1 cum bucket capacity @ 25 cum/hour hour 0.330 1838.00 606.54 P&M-017 b) GST (multiplying factor 0.2016) on (a) 183.22 c) Overhead charges @ 10 % on (a+b) 109.20 d) Contractor's profit @ 10 % on (a+b+c) 120.12 e) Cess @ 1% on (a+b+c+d) 13.21 Cost for 5.5 cum = a+b+c+d+e 1334.57 Rate per cum = (a+b+c+d+e)/ 5.5 242.65 Not Unloading will be by tipping. say 243.00					
1.2		Loading and Unloading of Boulders by Manual Means <i>Unit = cum</i> <i>Taking output = 5.5 cum</i> a) Labour Mate day 0.110 551.00 60.61 L-12 Mazdoor for loading and unloading day 0.750 424.00 318.00 L-13 b) Machinery Tipper 5.5 tonne capacity hour 0.750 916.00 687.00 P&M-048 c) GST (multiplying factor 0.2016) on (a+b) 214.83 d) Overhead charges @ 10 % on (a+b+c) 128.04 e) Contractor's profit @ 10 % on (a+b+c+d) 140.85 f) Cess @ 1 % on (a+b+c+d+e) 15.49 Cost for 5.5 cum = a+b+c+d+e+f 1564.82 Rate per cum = (a+b+c+d+e+f)/5.5 284.51 Not Unloading will be by tipping. say 285.00					
1.3		Loading and Unloading of Cement or Steel by Manual Means and Stacking. <i>Unit = tonne</i> <i>Taking output = 10 tonnes</i> a) Labour Mate day 0.080 551.00 44.08 L-12 Mazdoor for loading and unloading day 2.000 424.00 848.00 L-13 b) Machinery Truck 10 tonne capacity hour 2.000 778.00 1556.00 P&M-057 c) GST (multiplying factor 0.2016) on (a+b) 493.53 d) Overhead charges @ 10 % on (a+b+c) 294.16 e) Contractor's profit @ 10 % on (a+b+c+d) 323.58					

CHAPTER-1
CARRIAGE OF MATERIALS

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)				35.59	
		Cost for 10 tonnes = a+b+c+d+e+f				3594.94	
		Rate per tonnes = (a+b+c+d+e+f)/10				359.49	
					say	<u>359.00</u>	
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	916.00	366.40	P&M-048
		Time taken for empty return trip.	hour	0.290	916.00	265.64	P&M-048
		b) GST (multiplying factor 0.2016) on (a)				127.42	
		c) Overhead charges @ 10 % on (a+b)				75.95	
		d) Contractor's profit @ 10 % on (a+b+c)				83.54	
		e) Cess @ 1 % on (a+b+c+d)				9.19	
		cost for 100 t km = a+b+c+d+e				928.14	
		Rate per t.km = (a+b+c+d+e)/100				9.28	
					say	<u>9.30</u>	
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	916.00	458.00	P&M-048
		Time taken for empty return trip	hour	0.330	916.00	302.28	P&M-048
		b) GST (multiplying factor 0.2016) on (a)				153.27	
		c) Overhead charges @ 10 % on (a+b)				91.36	
		d) Contractor's profit @ 10 % on (a+b+c)				100.49	
		e) Cess @ 1 % on (a+b+c+d)				11.05	
		Cost for 100 t .km = a+b+c+d+e				1116.45	
		Rate per t.Km = (a+b+c+d+e)/100				11.16	
					say	<u>11.20</u>	
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	916.00	916.00	P&M-048
		Time taken for empty return trip	hour	0.670	916.00	613.72	P&M-048
		b) GST (multiplying factor 0.2016) on (a)				308.39	
		c) Overhead charges @ 10 % on (a+b)				183.81	
		d) Contractor's profit @ 10 % on (a+b+c)				202.19	
		e) Cess @ 1 % on (a+b+c+d)				22.24	
		Cost for 100 t .km = a+b+c+d+e				2246.35	
		Rate per t.Km = (a+b+c+d+e)/100				22.46	
					say	<u>22.50</u>	

CHAPTER-1
CARRIAGE OF MATERIALS

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	916.00	192.36	P&M-048
		Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.210	1838.00	385.98	P&M-017
		b) GST (multiplying factor 0.2016) on (a)				116.59	
		c) Overhead charges @ 10 % on (a+b)				69.49	
		d) Contractor's profit @ 10 % on (a+b+c)				76.44	
		e) Cess @ 1 % on (a+b+c+d)				8.41	
		Cost for 3.5 cum = a+b+c+d+e				849.27	
		Rate per cum = (a+b+c+d+e)/ 3.5				242.65	
	Not	Unloading will be by tipping.			say	243.00	
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	551.00	38.57	L-12
		Mazdoor for loading and unloading	day	0.480	424.00	203.52	L-13
		b) Machinery					
		Tipper 5.5 tonne capacity	hour	0.480	916.00	439.68	P&M-048
		c) GST (multiplying factor 0.2016) on (a+b)				137.44	
		d) Overhead charges @ 10 % on				81.92	
		e) Contractor's profit @ 10 % on (a+b+c+d)				90.11	
		f) Cess @ 1 % on (a+b+c+d+e)				9.91	
		Cost for 3.5 cum = a+b+c+d+e+f				1001.15	
		Rate per cum = (a+b+c+d+e+f)/3.5				286.04	
	Not	Unloading will be by tipping.			say	286.00	
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	551.00	33.06	L-12
		Mazdoor for loading and unloading	day	1.400	424.00	593.60	L-13
		b) Machinery					
		Truck 10 tonne capacity	hour	1.400	778.00	1089.20	P&M-057

CHAPTER-1
CARRIAGE OF MATERIALS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		c) GST (multiplying factor 0.2016) on (a+b)				345.92	
		d) Overhead charges @ 10 % on				206.18	
		e) Contractor's profit @ 10 % on (a+b+c+d)				226.80	
		f) Cess @ 1 % on (a+b+c+d+e)				24.95	
		Cost for 10 tonnes = a+b+c+d+e+f				2519.71	
		Rate per tonnes = (a+b+c+d+e+f)/7				359.96	
						say 360.00	
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	916.00	366.40	P&M-048
		Time taken for empty return trip.	hour	0.290	916.00	265.64	P&M-048
		b) GST (multiplying factor 0.2016) on (a)				127.42	
		c) Overhead charges @ 10 % on (a+b)				75.95	
		d) Contractor's profit @ 10 % on (a+b+c)				83.54	
		e) Cess @ 1 % on (a+b+c+d)				9.19	
		cost for 100 t km = a+b+c+d+e				928.14	
		Rate per t.km = (a+b+c+d+e)/70				13.26	
						say 13.30	
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	916.00	458.00	P&M-048
		Time taken for empty return trip	hour	0.330	916.00	302.28	P&M-048
		b) GST (multiplying factor 0.2016) on (a)				153.27	
		c) Overhead charges @ 10 % on (a+b)				91.36	
		d) Contractor's profit @ 10 % on (a+b+c)				100.49	
		e) Cess @ 1 % on (a+b+c+d)				11.05	
		Cost for 100 t .km = a+b+c+d+e				1116.45	
		Rate per t.Km = (a+b+c+d+e)/70				15.95	
						say 16.00	
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	916.00	916.00	P&M-048
		Time taken for empty return trip	hour	0.670	916.00	613.72	P&M-048
		b) GST (multiplying factor 0.2016) on (a)				308.39	
		c) Overhead charges @ 10 % on (a+b)				183.81	
		d) Contractor's profit @ 10 % on (a+b+c)				202.19	
		e) Cess @ 1 % on (a+b+c+d)				22.24	
		Cost for 100 t .km = a+b+c+d+e				2246.35	
		Rate per t.Km = (a+b+c+d+e)/70				32.09	
						say 32.10	

CHAPTER-1
CARRIAGE OF MATERIALS

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	778.00	311.20	P&M-057
		Time taken for empty return trip.	hour	0.290	778.00	225.62	P&M-057
		b) GST (multiplying factor 0.2016) on (a)				108.22	
		c) Overhead charges @ 10 % on (a+b)				64.50	
		d) Contractor's profit @ 10 % on (a+b+c)				70.95	
		e) Cess @ 1 % on (a+b+c+d)				7.80	
		cost for 100 t km = a+b+c+d+e				788.29	
		Rate per t.km = (a+b+c+d+e)/50				15.77	
					say	15.80	
		(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	778.00	389.00	P&M-057
		Time taken for empty return trip	hour	0.330	778.00	256.74	P&M-057
		b) GST (multiplying factor 0.2016) on (a)				130.18	
		c) Overhead charges @ 10 % on (a+b)				77.59	
		d) Contractor's profit @ 10 % on (a+b+c)				85.35	
		e) Cess @ 1 % on (a+b+c+d)				9.39	
		Cost for 100 t .km = a+b+c				948.25	
		Rate per t.Km = (a+b+c)/50				18.97	
					say	19.00	
		(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	778.00	778.00	P&M-057
		Time taken for empty return trip	hour	0.670	778.00	521.26	P&M-057
		b) GST (multiplying factor 0.2016) on (a)				261.93	
		c) Overhead charges @ 10 % on (a+b)				156.12	
		d) Contractor's profit @ 10 % on (a+b+c)				171.73	
		e) Cess @ 1 % on (a+b+c+d)				18.89	
		Cost for 100 t .km = a+b+c				1907.93	
		Rate per t.Km = (a+b+c)/50				38.16	
					say	38.20	

Chapter – 2

SITE CLEARANCE

Preamble:

- 1 Unless otherwise stated, the rates include sorting and disposal of unserviceable material and stacking of serviceable material with all lifts and upto a lead of 1000 m.
- 2 The rates include Tools & Plants (T&P) and scaffolding required for items of dismantling.
- 3 Carriage of dismantled materials, bushes, branches of tree, etc. has been catered with a tractor-trolley of 3 tonnes capacity with manual loading and unloading @ 2 trips per hour within a lead of 1000 m. This will be economical for such works as compared with a tipper.
- 4 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 structures, which remain submerged in water, the cost may be enhanced by 50 per cent. If site conditions warrant lowering of water level to facilitate dismantling, the cost may be enhanced by additional 25 per cent.
- 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 masonry 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&P) 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	551.00	11.02	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	424.00	254.40	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	530.00	53.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				64.19	
		d) Overhead charges @ 10 % on (a+b+c)				38.26	
		e) Contractor's profit @ 10 % on (a+b+c+d)				42.09	
		f) Cess @ 1% on (a+b+c+d+e)				4.63	
		Rate for each tree = a+b+c+d+e+f				467.59	
					say	<u>468.00</u>	
2.1		(ii) Girth from 600 mm to 900 mm					
		a) Labour					
		Mate	day	0.040	551.00	22.04	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	424.00	381.60	L-13
		b) Machinery					
		Tractor-trolley	hour	0.300	530.00	159.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				113.43	
		d) Overhead charges @ 10 % on (a+b+c)				67.61	
		e) Contractor's profit @ 10 % on (a+b+c+d)				74.37	
		f) Cess @ 1% on (a+b+c+d+e)				8.18	
		Rate for each tree = a+b+c+d+e+f				826.23	
					say	<u>826.00</u>	
2.1		(iii) Girth from 900 mm to 1800 mm					
		a) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.400	530.00	212.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				222.58	
		d) Overhead charges @ 10 % on (a+b+c)				132.67	
		e) Contractor's profit @ 10 % on (a+b+c+d)				145.93	
		f) Cess @ 1 % on (a+b+c+d+e)				16.05	
		Rate for each tree = a+b+c+d+e+f				1621.31	
					say	<u>1621.00</u>	
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	551.00	1102.00	L-12
		Mazdoor	day	50.000	424.00	21200.00	L-13
		b) GST (multiplying factor 0.2016) on (a)				4496.08	
		c) Overhead charges @ 10 % on (a+b)				2679.81	
		d) Contractor's profit @ 10 % on (a+b+c)				2947.79	
		e) Cess @ 1% on (a+b+c+d)				324.26	
		Rate per Hectare = a+b+c+d+e				32749.94	
					say	<u>32750.00</u>	
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	551.00	3306.00	L-12
		Mazdoor	day	150.000	424.00	63600.00	L-13
		b) Machinery					
		Tractor-trolley	hour	1.000	530.00	530.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				13595.10	
		d) Overhead charges @ 10 % on (a+b+c)				8103.11	
		e) Contractor's profit @ 10 % on (a+b+c+d)				8913.42	
		f) Cess @ 1 % on (a+b+c+d+e)				980.48	
		Rate for each tree = a+b+c+d+e+f				99028.11	
					say	<u>99028.00</u>	
2.3 (i)		B In area of thorny jungle					
		a) Labour					
		Mate	day	8.000	551.00	4408.00	L-12
		Mazdoor	day	200.000	424.00	84800.00	L-13
		b) Machinery					
		Tractor-trolley	hour	2.000	530.00	1060.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				18198.03	
		d) Overhead charges @ 10 % on (a+b+c)				10846.60	
		e) Contractor's profit @ 10 % on (a+b+c+d)				11931.26	
		f) Cess @ 1 % on (a+b+c+d+e)				1312.44	
		Rate for each tree = a+b+c+d+e+f				132556.33	
					say	<u>132556.00</u>	
2.3		(ii) By Mechanical Means					
		A In area of light jungle					
		a) Labour					
		Mate	day	0.160	551.00	88.16	L-12
		Mazdoor	day	4.000	424.00	1696.00	L-13
		b) Machinery					
		Dozer 80 HP with attachment for removal of trees & stumps	hour	10.000	5045.00	50450.00	P&M-014
		Tractor-trolley	hour	1.000	530.00	530.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				10637.25	
		d) Overhead charges @ 10 % on (a+b+c)				6340.14	
		e) Contractor's profit @ 10 % on (a+b+c+d)				6974.16	
		f) Cess @ 1 % on (a+b+c+d+e)				767.16	

CHAPTER-2
SITE CLEARANCE

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				77482.87	
					say	<u>77483.00</u>	
2.3	B	In area of thorny jungle					
(ii)	a)	Labour					
		Mate	day	0.240	551.00	132.24	L-12
		Mazdoor	day	6.000	424.00	2544.00	L-13
	b)	Machinery					
		Dozer 80 HP with attachment for removal of trees & stumps	hour	12.000	5045.00	60540.00	P&M-014
		Tractor-trolley	hour	1.500	530.00	795.00	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)				12904.67	
	d)	Overhead charges @ 10 % on (a+b+c)				7691.59	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				8460.75	
	f)	Cess @ 1 % on (a+b+c+d+e)				930.68	
		Rate for each tree = a+b+c+d+e+f				93998.93	
					say	<u>93999.00</u>	
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	551.00	22.04	L-12
		Mazdoor for dismantling and loading	day	1.000	424.00	424.00	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)				118.77	
	d)	Overhead charges @ 10 % on (a+b+c)				70.79	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				77.87	
	f)	Cess @ 1 % on (a+b+c+d+e)				8.57	
		Cost for 1.25 cum = a+b+c+d+e+f				865.14	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				692.11	
					say	<u>692.00</u>	
2.4 (i)	B	Cement Concrete Grade M-15 & M-20					
	a)	Labour					
		Mate	day	0.050	551.00	27.55	L-12
		Mazdoor for dismantling and loading	day	1.250	424.00	530.00	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)				141.25	
	d)	Overhead charges @ 10 % on (a+b+c)				84.19	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				92.61	
	f)	Cess @ 1 % on (a+b+c+d+e)				10.19	
		Cost for 1.25 cum = a+b+c+d+e+f				1028.89	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				823.11	
					say	<u>823.00</u>	
2.4 (i)	C	Prestressed / Reinforced cement concrete grade M-20 & above					
	a)	Labour					
		Mate	day	0.150	551.00	82.65	L-12

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Blacksmith	day	0.250	593.00	148.25	L-02
		Mazdoor for dismantling, loading and unloading	day	3.500	424.00	1484.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				374.57	
		d) Overhead charges @ 10 % on (a+b+c)				223.26	
		e) Contractor's profit @ 10 % on (a+b+c+d)				245.58	
		f) Cess @ 1% on (a+b+c+d+e)				27.01	
		Cost for 1.25 cum = a+b+c+d+e+f				2728.42	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				2182.74	
					say	<u>2183.00</u>	
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	551.00	11.02	L-12
		Mazdoor for loading and unloading	day	0.250	424.00	106.00	L-13
		Mazdoor with Pneumatic breaker	day	0.250	424.00	106.00	L-14
		b) Machinery					
		Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.5 cum per hour	hour	0.670	658.00	440.86	P&M-001
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				162.69	
		d) Overhead charges @ 10 % on (a+b+c)				96.97	
		e) Contractor's profit @ 10 % on (a+b+c+d)				106.66	
		f) Cess @ 1% on (a+b+c+d+e)				11.73	
		Cost for 1.25 cum = a+b+c+d+e+f				1185.03	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				948.02	
					say	<u>948.00</u>	
2.4 II	B	Prestressed / reinforced cement concrete grade M-20 & above					
		a) Labour					
		Mate	day	0.050	551.00	27.55	L-12
		Mazdoor with Pneumatic breaker	day	0.660	424.00	279.84	L-14
		Blacksmith	day	0.250	593.00	148.25	L-02
		Mazdoor for loading and unloading	day	0.250	424.00	106.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.00 cum per hour	hour	1.000	658.00	658.00	P&M-001
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				274.73	
		d) Overhead charges @ 10 % on (a+b+c)				163.75	
		e) Contractor's profit @ 10 % on (a+b+c+d)				180.12	
		f) Cess @ 1% on (a+b+c+d+e)				19.81	
		Cost for 1.25 cum = a+b+c+d+e+f				2001.15	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				1600.92	
					say	<u>1601.00</u>	
2.4	(ii)	Dismantling Brick / Tile work					
	A	In lime mortar					
		a) Labour					
		Mate	day	0.020	551.00	11.02	L-12
		Mazdoor for dismantling, loading and unloading	day	0.500	424.00	212.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				73.81	

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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)				43.99	
		e) Contractor's profit @ 10 % on (a+b+c+d)				48.39	
		f) Cess @ 1% on (a+b+c+d+e)				5.32	
		Cost for 1.25 cum = a+b+c+d+e+f				537.63	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				430.10	
					say	<u>430.00</u>	
2.4 (ii)	B	In cement mortar					
	a)	Labour					
		Mate	day	0.030	551.00	16.53	L-12
		Mazdoor for dismantling, loading and unloading	day	0.750	424.00	318.00	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)				96.29	
	d)	Overhead charges @ 10 % on (a+b+c)				57.39	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				63.13	
	f)	Cess @ 1% on (a+b+c+d+e)				6.94	
		Cost for 1.25 cum = a+b+c+d+e+f				701.38	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				561.10	
					say	<u>561.00</u>	
2.4 (ii)	C	In mud mortar					
	a)	Labour					
		Mate	day	0.020	551.00	11.02	L-12
		Mazdoor for dismantling and loading	day	0.400	424.00	169.60	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)				65.26	
	d)	Overhead charges @ 10 % on (a+b+c)				38.90	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				42.79	
	f)	Cess @ 1% on (a+b+c+d+e)				4.71	
		Cost for 1.25 cum = a+b+c+d+e+f				475.38	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				380.30	
					say	<u>380.00</u>	
2.4 (ii)	D	Dry brick pitching or brick soling					
	a)	Labour					
		Mate	day	0.014	551.00	7.71	L-12
		Mazdoor for Dismantling, loading and unloading	day	0.350	424.00	148.40	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)				60.32	
	d)	Overhead charges @ 10 % on (a+b+c)				35.95	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				39.55	
	f)	Cess @ 1% on (a+b+c+d+e)				4.35	
		Cost for 1.25 cum = a+b+c+d+e+f				439.38	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				351.50	
					say	<u>352.00</u>	
2.4	(iii)	Dismantling Stone Masonry					
	A	Rubble stone masonry in lime mortar					
	a)	Labour					
		Mate	day	0.024	551.00	13.22	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.600	424.00	254.40	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		c) GST (multiplying factor 0.2016) on (a+b)				82.80	
		d) Overhead charges @ 10 % on (a+b+c)				49.35	
		e) Contractor's profit @ 10 % on (a+b+c+d)				54.29	
		f) Cess @ 1% on (a+b+c+d+e)				5.97	
		Cost for 1.25 cum = a+b+c+d+e+f				603.13	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				482.50	
					say	<u>483.00</u>	
2.4 (iii)	B	Rubble stone masonry in cement mortar.					
	a)	Labour					
		Mate	day	0.030	551.00	16.53	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.750	424.00	318.00	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				96.29	
		d) Overhead charges @ 10 % on (a+b+c)				57.39	
		e) Contractor's profit @ 10 % on (a+b+c+d)				63.13	
		f) Cess @ 1% on (a+b+c+d+e)				6.94	
		Cost for 1.25 cum = a+b+c+d+e+f				701.38	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				561.10	
					say	<u>561.00</u>	
2.4 (iii)	C	Rubble Stone Masonry in mud mortar.					
	a)	Labour					
		Mate	day	0.020	551.00	11.02	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.500	424.00	212.00	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				73.81	
		d) Overhead charges @ 10 % on (a+b+c)				43.99	
		e) Contractor's profit @ 10 % on (a+b+c+d)				48.39	
		f) Cess @ 1% on (a+b+c+d+e)				5.32	
		Cost for 1.25 cum = a+b+c+d+e+f				537.63	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				430.10	
					say	<u>430.00</u>	
2.4 (iii)	D	Dry rubble masonry					
	a)	Labour					
		Mate	day	0.018	551.00	9.92	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.450	424.00	190.80	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				69.31	
		d) Overhead charges @ 10 % on (a+b+c)				41.31	
		e) Contractor's profit @ 10 % on (a+b+c+d)				45.44	
		f) Cess @ 1% on (a+b+c+d+e)				5.00	
		Cost for 1.25 cum = a+b+c+d+e+f				504.88	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				403.90	
					say	<u>404.00</u>	
2.4 (iii)	E	Dismantling stone pitching/ dry stone spalls.					
	a)	Labour					
		Mate	day	0.020	551.00	11.02	L-12
		Mazdoor for dismantling, loading and unloading.	day	0.400	424.00	169.60	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		c) GST (multiplying factor 0.2016) on (a+b)				65.26	
		d) Overhead charges @ 10 % on (a+b+c)				38.90	
		e) Contractor's profit @ 10 % on (a+b+c+d)				42.79	
		f) Cess @ 1% on (a+b+c+d+e)				4.71	
		Cost for 1.25 cum = a+b+c+d+e+f				475.38	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				380.30	
					say	<u>380.00</u>	
2.4 (iii)	F	Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.					
	a)	Labour					
		Mate	day	0.020	551.00	11.02	L-12
		Mazdoor for dismantling, loading and unloading	day	0.500	424.00	212.00	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)					
						73.81	
	d)	Overhead charges @ 10 % on (a+b+c)					
						43.99	
	e)	Contractor's profit @ 10 % on (a+b+c+d)					
						48.39	
	f)	Cess @ 1% on (a+b+c+d+e)					
						5.32	
		Cost for 1.25 cum = a+b+c+d+e+f				537.63	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				430.10	
					say	<u>430.00</u>	
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	551.00	33.06	L-12
		Carpenter	day	0.500	593.00	296.50	L-04
		Mazdoor for dismantling, loading and unloading.	day	1.000	424.00	424.00	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.270	530.00	143.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)					
						180.77	
	d)	Overhead charges @ 10 % on (a+b+c)					
						107.74	
	e)	Contractor's profit @ 10 % on (a+b+c+d)					
						118.52	
	f)	Cess @ 1% on (a+b+c+d+e)					
						13.04	
		Cost for 1.25 cum = a+b+c+d+e+f				1316.73	
		Rate per cum = (a+b+c+d+e+f)/ 1.25				1053.38	
					say	<u>1053.00</u>	
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	551.00	77.14	L-12
		Blacksmith	day	1.000	593.00	593.00	L-02
		Mazdoor for dismantling, loading and unloading	day	2.500	424.00	1060.00	L-13
		Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				43.25	
	b)	Machinery					
		Tractor-trolley	hour	0.170	530.00	90.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)					
						375.68	
	d)	Overhead charges @ 10 % on (a+b+c)					
						223.92	

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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)				246.31	
		f) Cess @ 1% on (a+b+c+d+e)				27.09	
		Rate per tonne = a+b+c+d+e+f				2736.49	
					say	<u>2736.00</u>	
2.4 (v)	B	Excluding dismembering.					
	a)	Labour					
		Mate	day	0.220	551.00	121.22	L-12
		Mazdoor for dismantling, loading and unloading	day	2.000	424.00	848.00	L-13
		Blacksmith	day	0.500	593.00	296.50	L-02
		Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				31.64	
	b)	Machinery					
		Tractor-trolley	hour	0.170	530.00	90.10	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)				279.71	
	d)	Overhead charges @ 10 % on (a+b+c)				166.72	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				183.39	
	f)	Cess @ 1% on (a+b+c+d+e)				20.17	
		Rate per tonne = a+b+c+d+e+f				2037.45	
					say	<u>2037.00</u>	
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	551.00	5.51	L-12
		Blacksmith	day	0.130	593.00	77.09	L-02
		Mazdoor	day	0.130	424.00	55.12	L-13
	b)	GST (multiplying factor 0.2016) on (a)				27.76	
	c)	Overhead charges @ 10 % on (a+b)				16.55	
	d)	Contractor's profit @ 10 % on (a+b+c)				18.20	
	e)	Cess @ 1% on (a+b+c+d)				2.00	
		Cost for 10 rivets = a+b+c+d+e				202.23	
		Rate for each rivet = (a+b+c+d+e)/10				20.22	
					say	<u>20.00</u>	
2.4	(vi)	Scrapping 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	551.00	77.14	L-12
		Mazdoor	day	3.500	424.00	1484.00	L-13
	b)	GST (multiplying factor 0.2016) on (a)				314.73	
	c)	Overhead charges @ 10 % on (a+b)				187.59	
	d)	Contractor's profit @ 10 % on (a+b+c)				206.35	
	e)	Cess @ 1% on (a+b+c+d)				22.70	
		Rate per1000 Nos = a+b+c+d+e				2292.51	
					say	<u>2293.00</u>	
2.4 (iv)	B	In mud mortar					
	a)	Labour					
		Mate	day	0.050	551.00	27.55	L-12
		Mazdoor	day	1.250	424.00	530.00	L-13
	b)	GST (multiplying factor 0.2016) on (a)				112.40	
	c)	Overhead charges @ 10 % on (a+b)				67.00	
	d)	Contractor's profit @ 10 % on (a+b+c)				73.70	
	e)	Cess @ 1% on (a+b+c+d)				8.11	
		Rate per1000 Nos = a+b+c+d+e				818.76	
					say	<u>819.00</u>	

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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					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
	A	In cement and lime mortar					
	a)	Labour					
		Mate	day	0.060	551.00	33.06	L-12
		Mazdoor	day	1.400	424.00	593.60	L-13
	b)	GST (multiplying factor 0.2016) on (a)					126.33
	c)	Overhead charges @ 10 % on (a+b)					75.30
	d)	Contractor's profit @ 10 % on (a+b+c)					82.83
	e)	Cess @ 1% on (a+b+c+d)					9.11
		Rate per cum = a+b+c+d+e					920.23
					say	<u>920.00</u>	
2.4 (vii)	B	In Mud mortar					
	a)	Labour					
		Mate	day	0.010	551.00	5.51	L-12
		Mazdoor	day	0.300	424.00	127.20	L-13
	b)	GST (multiplying factor 0.2016) on (a)					26.75
	c)	Overhead charges @ 10 % on (a+b)					15.95
	d)	Contractor's profit @ 10 % on (a+b+c)					17.54
	e)	Cess @ 1% on (a+b+c+d)					1.93
		Rate per cum = a+b+c+d+e					194.88
					say	<u>195.00</u>	
2.4	(viii)	Scarping Plaster in Lime or Cement Mortar from Brick/ Stone Masonry					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
	a)	Labour					
		Mate	day	0.160	551.00	88.16	L-12
		Mazdoor for scarping and loading	day	4.000	424.00	1696.00	L-13
	b)	Machinery					
		Tractor-trolley	hour	0.320	530.00	169.60	P&M-053
	c)	GST (multiplying factor 0.2016) on (a+b)					393.88
	d)	Overhead charges @ 10 % on (a+b+c)					234.76
	e)	Contractor's profit @ 10 % on (a+b+c+d)					258.24
	f)	Cess @ 1% on (a+b+c+d+e)					28.41
		Cost for 100 sqm = a+b+c+d+e+f					2869.05
		Rate per sqm = (a+b+c+d+e+f)/100					28.69
					say	<u>29.00</u>	
2.4	(ix)	Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works.					
		<i>Unit = metre</i>					
		<i>Taking output = 1 metre</i>					
	A	Up to 600 mm dia					
	a)	Labour					
		Mate	day	0.020	551.00	11.02	L-12
		Mazdoor	day	0.520	424.00	220.48	L-13
	b)	GST (multiplying factor 0.2016) on (a)					46.67
	c)	Overhead charges @ 10 % on (a+b)					27.82
	d)	Contractor's profit @ 10 % on (a+b+c)					30.60
	e)	Cess @ 1% on (a+b+c+d)					3.37
		Rate per meter = a+b+c+d+e					339.96
					say	<u>340.00</u>	
2.4 (ix)	B	Above 600 mm to 900 mm dia					
	a)	Labour					
		Mate	day	0.030	551.00	16.53	L-12

CHAPTER-2
SITE CLEARANCE

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Mazdoor	day	0.700	424.00	296.80	L-13
		b) GST (multiplying factor 0.2016) on (a)				63.17	
		c) Overhead charges @ 10 % on (a+b)				37.65	
		d) Contractor's profit @ 10 % on (a+b+c)				41.42	
		e) Cess @ 1% on (a+b+c+d)				4.56	
		Rate per meter = a+b+c+d+e				460.13	
					say	<u>460.00</u>	
2.4 (ix)	C	Above 900 mm					
		a) Labour					
		Mate	day	0.050	551.00	27.55	L-12
		Mazdoor	day	1.200	424.00	508.80	L-13
		b) GST (multiplying factor 0.2016) on (a)				108.13	
		c) Overhead charges @ 10 % on (a+b)				64.45	
		d) Contractor's profit @ 10 % on (a+b+c)				70.89	
		e) Cess @ 1% on (a+b+c+d)				7.80	
		Rate per meter = a+b+c+d+e				787.62	
					say	<u>788.00</u>	
Not e	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	551.00	33.06	L-12
		Mazdoor for dismantling, loading and unloading	day	1.500	424.00	636.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.380	530.00	201.40	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				175.48	
		d) Overhead charges @ 10 % on (a+b+c)				104.59	
		e) Contractor's profit @ 10 % on (a+b+c+d)				115.05	
		f) Cess @ 1% on (a+b+c+d+e)				12.66	
		Rate per cum = a+b+c+d+e+f				1278.24	
					say	<u>1278.00</u>	
2.5 I	B	Granular courses					
		a) Labour					
		Mate	day	0.040	551.00	22.04	L-12
		Mazdoor for dismantling, loading and unloading.	day	1.000	424.00	424.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.330	530.00	174.90	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				125.18	
		d) Overhead charges @ 10 % on (a+b+c)				74.61	
		e) Contractor's profit @ 10 % on (a+b+c+d)				82.07	
		f) Cess @ 1% on (a+b+c+d+e)				9.03	
		Rate per cum = a+b+c+d+f				911.83	
					say	<u>912.00</u>	

CHAPTER-2
SITE CLEARANCE

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	551.00	5.51	L-12
		Mazdoor	day	0.300	424.00	127.20	L-13
		b) Machinery					
		Tractor-trolley	hour	0.380	530.00	201.40	P&M-053
		Farm tractor with ripper @ 60 cum per hour	hour	0.020	511.00	10.22	P&M-055
		c) GST (multiplying factor 0.2016) on (a+b)				69.42	
		d) Overhead charges @ 10 % on (a+b+c)				41.38	
		e) Contractor's profit @ 10 % on (a+b+c+d)				45.51	
		f) Cess @ 1% on (a+b+c+d+e)				4.95	
		Rate per cum = a+b+c+d+f				505.59	
					say	506.00	
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	551.00	16.53	L-12
		Semi skilled mazdoor for operating pneumatic tools	day	0.500	424.00	212.00	L-14
		Mazdoors as helpers including loading and unloading	day	0.500	424.00	212.00	L-13
		b) Machinery					
		Air compressor 250 cfm with two leads for pneumatic cutters/ hammers @ 1 cum per hour	hour	1.000	658.00	658.00	P&M-001
		Tractor-trolley	hour	0.400	530.00	212.00	P&M-053
		Joint Cutting Machine with 2-3 blades	hour	1.000	143.00	143.00	P&M-083
		c) GST (multiplying factor 0.2016) on (a+b)				293.03	
		d) Overhead charges @ 10 % on (a+b+c)				174.66	
		e) Contractor's profit @ 10 % on (a+b+c+d)				192.12	
		f) Cess @ 1% on (a+b+c+d+e)				21.13	
		Rate per cum = a+b+c+d+f				2134.47	
					say	2134.00	
	Not e	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	551.00	5.51	L-12
		Mazdoor including loading and unloading	day	0.150	424.00	63.60	L-13
		b) Machinery					
		Tractor-trolley	hour	0.050	530.00	26.50	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				19.27	
		d) Overhead charges @ 10 % on (a+b+c)				11.49	

CHAPTER-2
SITE CLEARANCE

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)				12.64	
		f) Cess @ 1% on (a+b+c+d+e)				1.39	
		Rate per metre = a+b+c+d+e+f				140.40	
					say	<u>140.00</u>	
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	551.00	5.51	L-12
		Mazdoor including loading and unloading	day	0.150	424.00	63.60	L-13
		b) Machinery					
		Tractor-trolley	hour	0.200	530.00	106.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				35.30	
		d) Overhead charges @ 10 % on (a+b+c)				21.04	
		e) Contractor's profit @ 10 % on (a+b+c+d)				23.15	
		f) Cess @ 1% on (a+b+c+d+e)				2.55	
		Cost for 10 m = a+b+c+d+e+f				257.15	
		Rate per metre = (a+b+c+d+e+f)/10				25.72	
					say	<u>26.00</u>	
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	551.00	8.27	L-12
		Mazdoor including loading and unloading	day	0.225	424.00	95.40	L-13
		b) Machinery					
		Tractor-trolley	hour	0.300	530.00	159.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				52.95	
		d) Overhead charges @ 10 % on (a+b+c)				31.56	
		e) Contractor's profit @ 10 % on (a+b+c+d)				34.72	
		f) Cess @ 1% on (a+b+c+d+e)				3.82	
		Cost for 10 m = a+b+c+d+e+f				385.72	
		Rate per metre = (a+b+c+d+e+f)/10				38.57	
					say	<u>39.00</u>	
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	551.00	71.63	L-12
		Mazdoor	day	0.750	424.00	318.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.150	530.00	79.50	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				94.58	
		d) Overhead charges @ 10 % on (a+b+c)				56.37	
		e) Contractor's profit @ 10 % on (a+b+c+d)				62.01	
		f) Cess @ 1% on (a+b+c+d+e)				6.82	
		Rate for one 5th KM stone =				688.91	
					say	<u>689.00</u>	

CHAPTER-2
SITE CLEARANCE

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	551.00	11.02	L-12
		Mazdoor	day	0.500	424.00	212.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	530.00	53.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				55.65	
		d) Overhead charges @ 10 % on (a+b+c)				33.17	
		e) Contractor's profit @ 10 % on (a+b+c+d)				36.48	
		f) Cess @ 1% on (a+b+c+d+e)				4.01	
		Rate for one ordinary KM stone =				405.33	
					say	<u>405.00</u>	
C		Hectometre Stone					
		Quantity of cement concrete = 0.048 cum					
		a) Labour					
		Mate	day	0.004	551.00	2.20	L-12
		Mazdoor	day	0.100	424.00	42.40	L-13
		b) Machinery					
		Tractor-trolley	hour	0.020	530.00	10.60	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				11.13	
		d) Overhead charges @ 10 % on (a+b+c)				6.63	
		e) Contractor's profit @ 10 % on (a+b+c+d)				7.30	
		f) Cess @ 1% on (a+b+c+d+e)				0.80	
		Rate for one Hectometre stone =				81.06	
		a+b+c+d+e+f					
					say	<u>81.00</u>	
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.					
		<i>Unit = running metre</i>					
		<i>Taking output = 30 metres</i>					
		a) Labour					
		Mate	day	0.150	551.00	82.65	L-12
		Mazdoor including loading and unloading	day	3.000	424.00	1272.00	L-13
		Blacksmith	day	0.750	593.00	444.75	L-02
		b) Machinery					
		Tractor-trolley	hour	0.150	530.00	79.50	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				378.79	
		d) Overhead charges @ 10 % on (a+b+c)				225.77	
		e) Contractor's profit @ 10 % on (a+b+c+d)				248.35	
		f) Cess @ 1% on (a+b+c+d+e)				27.32	
		Cost for 30 metres = a+b+c+d+e+f				2759.13	
		Rate per metre = (a+b+c+d+e+f)/30				91.97	
					say	<u>92.00</u>	
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					

**CHAPTER-2
SITE CLEARANCE**

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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Unit = running metre

Taking output = 10 metres

a) Labour

Mate	day	0.090	551.00	49.59	L-12
Mazdoor	day	2.000	424.00	848.00	L-13
Plumber	day	0.250	593.00	148.25	L-02

b) Machinery

Truck 10 tonne capacity	hour	0.250	778.00	194.50	P&M-057
Light Crane 3 tonne capacity	hour	0.500	490.00	245.00	P&M-013

c) GST (multiplying factor 0.2016) on (a+b) 299.44

d) Overhead charges @ 10 % on (a+b+c) 178.48

e) Contractor's profit @ 10 % on (a+b+c+d) 196.33

f) Cess @ 1% on (a+b+c+d+e) 21.60

Cost for 10 metres = a+b+c+d+e+f 2181.19

Rate per metre = (a+b+c+d+e+f)/10 218.12

say 218.00

Not e 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	551.00	55.10	L-12
Mazdoor	day	2.500	424.00	1060.00	L-13

b) Machinery

Crane 5 tonne capacity	hour	0.300	827.00	248.10	P&M-070
Truck flat body 10 tonne	hour	1.000	778.00	778.00	P&M-057

c) GST (multiplying factor 0.2016) on (a+b) 431.67

d) Overhead charges @ 10 % on (a+b+c) 257.29

e) Contractor's profit @ 10 % on (a+b+c+d) 283.02

f) Cess @ 1% on (a+b+c+d+e) 31.13

Cost for 10 metres = a+b+c+d+e+f 3144.31

Rate per metre = (a+b+c+d+e+f)/10 314.43

say 314.00

Not e 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

CHAPTER-2
SITE CLEARANCE

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

Taking output = 30 Nos

a) Labour

Mate	day	0.480	551.00	264.48	L-12
Mazdoor	day	10.000	424.00	4240.00	L-13
Electrician/Lineman	day	2.000	593.00	1186.00	L-02

b) Machinery

Tractor-trolley	hour	1.500	530.00	795.00	P&M-053
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c) GST (multiplying factor 0.2016) on (a+b) 1307.47

d) Overhead charges @ 10 % on (a+b+c) 779.30

e) Contractor's profit @ 10 % on (a+b+c+d) 857.23

f) Cess @ 1% on (a+b+c+d+e) 94.29

Cost for 30 poles = a+b+c+d 9523.77

Rate per pole = (a+b+c+d)/30 317.46

say 317.00

Chapter – 3

EARTHWORK, EROSION CONTROL AND DRAINAGE

Preamble:

- 1 The rates have been analysed using mechanical means. Manual means for certain items have also been provided which can be used for areas inaccessible to machines and also for small jobs.
- 2 In the rate analyses of earthwork, compacted volume of earth has been considered.
- 3 Cutting of earth by dozer has been proposed where the cut earth can be utilized for filling for embankment within a lead upto 100 m.
- 4 Where lead for transporting of earth is more than 100 m, excavator and tipper have been provided.
- 5 The rate caters for disposal of unsuitable soil only upto a distance of 1 km. The cost of transportation beyond the initial lead of 1 km will be paid separately based on tonne-kilometerage.
- 6 The replacement of unsuitable soil by suitable soil shall be provided separately in the estimate. The rate analysis for removal of unsuitable soil does not provide for replacement by suitable soil.
- 7 In cases where embankment is constructed with earth taken from roadway, the cost of depositing the earth at the site of embankment is already included in the disposal of excavated earth and, therefore, the input of dozer for spreading earth can be deleted.
- 8 For narrow and restricted areas, plate compactor has been proposed for compaction to achieve the desired density.
- 9 In case excavated rock is found suitable for incorporation in works, suitable credit for the available rock shall be given.
- 10 For excavation of structures refer to Chapter 11 dealing with items of Foundation.
- 11 The possibility of using the blasted rock fragments for backfilling behind structures or backfilling of foundation pits or filling in medians/separators or use in service road shall be examined before proposing disposal of excavated rock.
- 12 For inhabited areas, controlled blasting with limited charges of explosives has been provided. This involves smaller drill holes and additional requirement of electric detonators. Provision has been made accordingly.
- 13 Any work involved for crossing of water courses for irrigation purpose, etc. will be priced under respective items, like, excavation, grubbing, clearing, etc. for which rate analysis have separately been made.
- 14 Earth excavated from drains can be used in roadway berms. Hence carriage for disposal of same is not provided.
- 15 In case of rock fill embankment, it is assumed that material is available at site from rock cutting.

CHAPTER - 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

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 upto 1000 metres. <i>Unit = cum</i> <i>Taking output = 120 cum</i>					
		a) Labour					
		Mate	day	1.800	551.00	991.80	L-12
		Mazdoor	day	45.000	424.00	19080.00	L-13
		b) Machinery					
		Truck 5.5 cum capacity	hour	10.000	778.00	7780.00	P&M-057
		c) GST (multiplying factor 0.2016) on (a+b)				5614.92	
		d) Overhead charges @ 10 % on (a+b+c)				3346.67	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3681.34	
		f) Cess @ 1% on (a+b+c+d+e)				404.95	
		Cost of 120 cum = a+b+c+d+e+f				40899.68	
		Rate per cum = (a+b+c+d+e+f)/120				340.83	
					say	<u>341.00</u>	
		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 <i>Unit = cum</i> <i>Taking output = 120 cum</i>					
		a) Labour					
		Mate	day	2.800	551.00	1542.80	L-12
		Mazdoor	day	70.000	424.00	29680.00	L-13
		b) Machinery					
		Truck 5.5 cum capacity	hour	10.000	778.00	7780.00	P&M-057
		c) GST (multiplying factor 0.2016) on (a+b)				7862.96	
		d) Overhead charges @ 10 % on (a+b+c)				4686.58	
		e) Contractor's profit @ 10 % on (a+b+c+d)				5155.23	
		f) Cess @ 1% on (a+b+c+d+e)				567.08	
		Cost of 120 cum = a+b+c+d+e+f				57274.65	
		Rate per cum = (a+b+c+d+e+f)/120				477.29	
					say	<u>477.00</u>	
		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 lead 50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections. <i>Unit = cum</i> <i>Taking output = 180 cum</i>					
		a) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Dozer, 80 HP @ 30 cum per hour	hour	6.000	5045.00	30270.00	P&M-014
		c) GST (multiplying factor 0.2016) on (a+b)				6282.28	

CHAPTER - 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

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)				3744.44	
		e) Contractor's profit @ 10 % on (a+b+c+d)				4118.88	
		f) Cess @ 1% on (a+b+c+d+e)				453.08	
		Cost for 180 cum = a+b+c+d+e+f				45760.76	
		Rate per cum = (a+b+c+d+e+f)/180				254.23	
						say 254.00	
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	551.00	66.12	L-12
		Mazdoor	day	3.000	424.00	1272.00	L-13
		b) Machinery					
		Dozer, 80 HP @ 20 cum per hour	hour	6.000	5045.00	30270.00	P&M-014
		c) GST (multiplying factor 0.2016) on (a+b)				6372.20	
		d) Overhead charges @ 10 % on (a+b+c)				3798.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				4177.84	
		f) Cess @ 1% on (a+b+c+d+e)				459.56	
		Cost for 108 cum = a+b+c+d+e+f				46415.75	
		Rate per cum = (a+b+c+d+e+f)/108				429.78	
						say 430.00	
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 Output = 180 cum					
		a) Labour					
		Mate	day	0.220	551.00	121.22	L-12
		Mazdoor	day	3.000	424.00	1272.00	L-13
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		b) Machinery					
		Dozer, 80 HP @ 30 cum per hour	hour	6.000	5045.00	30270.00	P&M-014
		Air compressor, 250 cfm with 2 jack hammer	hour	6.000	658.00	3948.00	P&M-001
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 10 tonne capacity	hour	11.250	916.00	10305.00	P&M-048
		c) Materials					
		Gelatin 80 per cent	kg	63.000	166.00	10458.00	M-104
		Electric Detonators @ 1 detonator for 2 gelatin sticks of 125 gms each	each	252.000	11.59	2920.68	M-094 /100
		Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	(270.00)	(24300.00)	M-089
		d) GST (multiplying factor 0.2016) on (a+b+c)				9528.15	
		e) Overhead charges @ 10 % on (a+b+c+d)				5679.08	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				6246.99	
		g) Cess @ 1% on (a+b+c+d+e+f)				687.17	

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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				69404.04	
		Rate per cum = (a+b+c+d+e+f+g)/180				385.58	
					say	<u>386.00</u>	
		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	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	2044.00	12264.00	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.000	916.00	14656.00	P&M-048
		c) GST (multiplying factor 0.2016) on (a+b)				5606.92	
		d) Overhead charges @ 10 % on (a+b+c)				3341.90	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3676.09	
		f) Cess @ 1% on (a+b+c+d+e)				404.37	
		Cost for 360 cum = a+b+c+d+e+f				40841.36	
		Rate per cum = (a+b+c+d+e+f)/360				113.45	
					say	<u>113.00</u>	
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	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Hydraulic Excavator 0.90 cum bucket capacity @ 36 cum per hour	hour	6.000	2044.00	12264.00	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	11.000	916.00	10076.00	P&M-048
		c) GST (multiplying factor 0.2016) on (a+b)				4683.59	
		d) Overhead charges @ 10 % on (a+b+c)				2791.57	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3070.72	
		f) Cess @ 1% on (a+b+c+d+e)				337.78	
		Cost for 240 cum = a+b+c+d+e+f				34115.74	
		Rate per cum = (a+b+c+d+e+f)/240				142.15	
					say	<u>142.00</u>	

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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	551.00	220.40	L-12
		Mazdoor for trimming slopes including mannul loading in truck	day	10.000	424.00	4240.00	L-13
		b) Machinery					
		Hydraulic excavator with rock breaker attachment @ 6 cum per hour	hour	6.000	2044.00	12264.00	P&M-026
		Tipper 5.5 cum capacity, 1 trip per hour.	hour	6.500	916.00	5954.00	P&M-048
		Credit for excavated rock found suitable for use @ 50 per cent of excavated quantity	cum	18.000	(270.00)	(4860.00)	M-089
		c) GST (multiplying factor 0.2016) on (a+b)				3592.19	
		d) Overhead charges @ 10 % on (a+b+c)				2141.06	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2355.17	
		f) Cess @ 1% on (a+b+c+d+e)				259.07	
		Cost for 36 cum = a+b+c+d+e+f				26165.89	
		Rate per cum = (a+b+c+d+e+f)/36				726.83	
						say 727.00	
		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	551.00	903.64	L-12
		Mazdoor including loading in truck	day	16.000	424.00	6784.00	L-13
		Chiseller	day	24.000	551.00	13224.00	L-05
		Blacksmith	day	1.000	593.00	593.00	L-02
		b) Machinery					
		Tipper 5.5 cum capacity, 1 trip per hour.	hour	2.900	916.00	2656.40	P&M-048
		Credit for excavated rock found suitable for use @ 50 per cent of excavated	cum	8.000	(270.00)	(2160.00)	M-089
		c) GST (multiplying factor 0.2016) on (a+b)				4435.41	
		d) Overhead charges @ 10 % on (a+b+c)				2643.65	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2908.01	
		f) Cess @ 1% on (a+b+c+d+e)				319.88	
		Cost for 16 cum = a+b+c+d+e+f				32307.99	
		Rate per cum = (a+b+c+d+e+f)/16				2019.25	
						say 2019.00	
		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.					

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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	551.00	121.22	L-12
		Mazdoor	day	3.000	424.00	1272.00	L-13
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.500	551.00	275.50	L-03
		b) Machinery					
		Dozer 80 HP @ 30 cum per hour	hour	6.000	5045.00	30270.00	P&M-014
		Air compressor, 250 cfm with 2 jack hammers	hour	6.000	658.00	3948.00	P&M-001
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	8.200	916.00	7511.20	P&M-048
		c) Materials					
		Gelatin 80 per cent	kg	63.000	166.00	10458.00	M-104
		Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	1008.000	11.59	11682.72	M-094 /100
		Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	(270.00)	(24300.00)	M-089
		Add 5 per cent of cost of a+b+c towards muffling arrangements to guard against any rock fly off during blasting				3883.43	
		d) GST (multiplying factor 0.2016) on (a+b+c)				11542.02	
		e) Overhead charges @ 10 % on (a+b+c+d)				6879.41	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				7567.35	
		g) Cess @ 1% on (a+b+c+d+e+f)				832.41	
		Cost for 180 cum = a+b+c+d+e+f+g				84073.26	
		Rate per cum = (a+b+c+d+e+f+g)/180				467.07	
					say	467.00	
		Note 1. Credit is considered for 50 per cent of quantity of blasted 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	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Hydraulic excavator 0.90 cum bucket capacity @ 50 cum per hour	hour	6.000	2044.00	12264.00	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	13.640	916.00	12494.24	P&M-048
		c) GST (multiplying factor 0.2016) on (a+b)				5171.10	
		d) Overhead charges @ 10 % on (a+b+c)				3082.14	

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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)				3390.36	
		f) Cess @ 1% on (a+b+c+d+e)				372.94	
		Cost for 300 cum = a+b+c+d+e+f				37666.86	
		Rate per cum = (a+b+c+d+e+f)/300				125.56	
					say	<u>126.00</u>	
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	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Excavator 0.90 cum bucket capacity @ 60 cum per hour	hour	6.000	2044.00	12264.00	P&M-026
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.360	916.00	14985.76	P&M-048
		c) GST (multiplying factor 0.2016) on (a+b)				5673.39	
		d) Overhead charges @ 10 % on (a+b+c)				3381.52	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3719.68	
		f) Cess @ 1% on (a+b+c+d+e)				409.16	
		Cost for 360 cum = a+b+c+d+e+f				41325.59	
		Rate per cum = (a+b+c+d+e+f)/360				114.79	
					say	<u>115.00</u>	
		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	551.00	330.60	L-12
		Mazdoor	day	15.000	424.00	6360.00	L-13
		b) Machinery					
		Air compressor 250 cfm with 2 leads @ 20 cum per hour	hour	6.000	658.00	3948.00	P&M-001
		Dozer, 80 HP	hour	6.000	5045.00	30270.00	P&M-014
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		c) Materials					
		Gelatin 80 per cent	kg	42.000	166.00	6972.00	M-104
		Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	672.000	11.59	7788.48	M-094 /100
		d) GST (multiplying factor 0.2016) on (a+b+c)				13446.13	
		e) Overhead charges @ 10 % on (a+b+c+d)				8014.32	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				8815.75	
		g) Cess @ 1% on (a+b+c+d+e+f)				969.73	
		Cost for 400 sqm = a+b+c+d+e+f+g				97943.01	

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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				244.86	
					say	<u>245.00</u>	
		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	551.00	176.32	L-12
		Mazdoor	day	8.000	424.00	3392.00	L-13
		b) GST (multiplying factor 0.2016) on (a)				719.37	
		c) Overhead charges @ 10 % on (a+b)				428.77	
		d) Contractor's profit @ 10 % on (a+b+c)				471.65	
		e) Cess @ 1% on (a+b+c+d)				51.88	
		Cost for 10 cum = a+b+c+d+e				5239.99	
		Rate per cum = (a+b+c+d+e)/10				524.00	
					say	<u>524.00</u>	
		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	551.00	176.32	L-12
		Mazdoor	day	8.000	424.00	3392.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	2044.00	12264.00	P&M-026
		c) GST (multiplying factor 0.2016) on (a+b)				3191.80	
		d) Overhead charges @ 10 % on (a+b+c)				1902.41	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2092.65	
		f) Cess @ 1% on (a+b+c+d+e)				230.19	
		Cost for 300 cum = a+b+c+d+e+f				23249.37	
		Rate per cum = (a+b+c+d+e+f)/300				77.50	
					say	<u>78.00</u>	
		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	551.00	220.40	L-12
		Mazdoor	day	10.000	424.00	4240.00	L-13
		b) GST (multiplying factor 0.2016) on (a)				899.22	
		c) Overhead charges @ 10 % on (a+b)				535.96	

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
3.13 (ii)	B	d) Contractor's profit @ 10 % on (a+b+c)				589.56	
		e) Cess @ 1% on (a+b+c+d)				64.85	
		Cost for 10 cum = a+b+c+d+e				6549.99	
		Rate per cum = (a+b+c+d+e)/10				655.00	
					say	<u>655.00</u>	
		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	(iii)	A Manual Means					
		Unit = cum					
		Taking output = 10 cum					
		a) Labour					
		i) Mate	day	0.530	551.00	292.03	L-12
		ii) Driller	day	0.840	551.00	462.84	L-06
		iii) Blaster	day	0.400	551.00	220.40	L-03
		iv) Mazdoor	day	12.000	424.00	5088.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with 2 jack hammer @ 15 cum per hour	hour	0.667	658.00	438.89	P&M-001
		c) Material					
		Blasting Material	kg	3.500	166.00	581.00	M-104
		Detonator electric	each	14.000	11.59	162.26	M-094 /100
		d) GST (multiplying factor 0.2016) on (a+b+c)				1460.68	
		e) Overhead charges @ 10 % on (a+b+c+d)				870.61	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				957.67	
		g) Cess @ 1% on (a+b+c+d+e+f)				105.34	
		Cost for 10 cum = a+b+c+d+e+f+g				10639.72	
		Rate per cum = (a+b+c+d+e+f+g)/10				1063.97	
					say	<u>1064.00</u>	
		Note Cost of dewatering @ 10 per cent of labour cost may be added, where required Assessment for dewatering shall be made as per site conditions.					

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Sr No	Ref. to MoRTH/D SR Spec.		Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
3.13	(iv)		Hard Rock (blasting prohibited)					
			<i>Unit = cum</i>					
			<i>Taking output = 10 cum</i>					
	A		Mechanical Means					
		a)	Labour					
			Mate	day	0.200	551.00	110.20	L-12
			Mazdoor	day	5.000	424.00	2120.00	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1 cum per hour	hour	10.000	658.00	6580.00	P&M-001
		c)	GST (multiplying factor 0.2016) on (a+b)				1776.14	
		d)	Overhead charges @ 10 % on (a+b+c)				1058.63	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				1164.50	
		f)	Cess @ 1% on (a+b+c+d+e)				128.09	
			Cost for 10 cum = a+b+c+d+e+f				12937.56	
			Rate per cum = (a+b+c+d+e+f)/10				1293.76	
						say	1294.00	
	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					
			<i>Unit = cum</i>					
			<i>Taking output = 10 cum</i>					
	A		Manual means (upto 3 m depth)					
		a)	Labour					
			Mate/Supervisor	day	0.400	551.00	220.40	L-12
			Mazdoor	day	10.000	424.00	4240.00	L-13
		b)	Machinery					
			Tractor-trolley	hour	2.670	530.00	1415.10	P&M-053
		c)	Material					
			Selected earth for refilling	cum	5.000	212.00	1060.00	M-163
		d)	GST (multiplying factor 0.2016) on (a+b+c)				1398.20	
		e)	Overhead charges @ 10 % on (a+b+c+d)				833.37	
		f)	Contractor's profit @ 10 % on (a+b+c+d+e)				916.71	
		g)	Cess @ 1% on (a+b+c+d+e+f)				100.84	
			Cost for 10 cum = a+b+c+d+e+f+g				10184.62	
			Rate per cum = (a+b+c+d+e+f+g)/ 10				1018.46	
						say	1018.00	
	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	551.00	44.08	L-12
		ii)	Mazdoor for dressing sides, bottom and backfilling	day	2.000	424.00	848.00	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.170	2044.00	347.48	P&M-026

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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	916.00	412.20	P&M-048
		c) Material					
		Selected earth for refilling	cum	5.000	212.00	1060.00	M-163
		d) GST (multiplying factor 0.2016) on (a+b+c)				546.69	
		e) Overhead charges @ 10 % on (a+b+c+d)				325.85	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				358.43	
		g) Cess @ 1% on (a+b+c+d+e+f)				39.43	
		Cost for 10 cum = a+b+c+d+e+f+g				3982.16	
		Rate per cum = (a+b+c+d+e+f+g)/10				398.22	
					say	<u>398.00</u>	
		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	551.00	110.20	L-12
		Mazdoor including loading and unloading	day	5.000	424.00	2120.00	L-13
		b) Machinery					
		Tractor-trolley	hour	1.670	530.00	885.10	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				628.04	
		d) Overhead charges @ 10 % on (a+b+c)				374.33	
		e) Contractor's profit @ 10 % on (a+b+c+d)				411.77	
		f) Cess @ 1% on (a+b+c+d+e)				45.29	
		Cost for 100 sqm = a+b+c+d+e+f				4574.73	
		Rate per sqm = (a+b+c+d+e+f)/100				45.75	
					say	<u>46.00</u>	
		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	551.00	5.51	L-12
		Mazdoor	day	0.250	424.00	106.00	L-13
		b) Machinery					
		Tractor with ripper attachment @ 60 cum per hour	hour	0.080	511.00	40.88	P&M-055
		Front end loader 1 cum bucket capacity @ 25 cum per hour	hour	0.200	1838.00	367.60	P&M-017
		Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.230	916.00	210.68	P&M-048
		c) GST (multiplying factor 0.2016) on (a+b)				147.30	
		d) Overhead charges @ 10 % on (a+b+c)				87.80	

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
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e)		Contractor's profit @ 10 % on (a+b+c+d)				96.58	
f)		Cess @ 1% on (a+b+c+d+e)				10.62	
		Cost for 100 sqm = a+b+c+d+e+f				1072.97	
		Rate per sqm = (a+b+c+d+e+f)/100				10.73	
					say	11.00	

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	551.00	22.04	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
b)		Machinery					
		Hydraulic Excavator 1 cum bucket capacity @ 60 cum per hour	hour	1.670	2044.00	3413.48	P&M-026
		Tipper 10 tonne capacity	tonne. km	160 x L	18.00	8640.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				864.00	
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5045.00	2522.50	P&M-014
		Motor grader for grading @ 100 cum per hour	hour	1.000	3247.00	3247.00	P&M-032
		Water tanker 6 KL capacity	hour	4.000	724.00	2896.00	P&M-060
		Three wheel 80-100 kN Statis Roller	hour	1.000	969.00	969.00	P&M-059
c)		Material					
		Cost of water	KL	24.000	71.00	1704.00	M-189
		Compensation for earth taken from private land	cum	100.000	0.00	0.00	M-092
d)		GST (multiplying factor 0.2016) on (a+b+c)				4979.93	
e)		Overhead charges @ 10 % on (a+b+c+d)				2968.20	
f)		Contractor's profit @ 10 % on (a+b+c+d+e)				3265.02	
g)		Cess @ 1% on (a+b+c+d+e+f)				359.15	
		Cost for 100 cum = a+b+c+d+e+f+g				36274.32	
		Rate per cum = (a+b+c+d+e+f+g)/100				362.74	
					say	363.00	

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	551.00	11.02	L-12
		Mazdoor	day	0.500	424.00	212.00	L-13
b)		Machinery					
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5045.00	2522.50	P&M-014

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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	3247.00	3247.00	P&M-032
		Water tanker 6 KL capacity	hour	4.000	724.00	2896.00	P&M-060
		Three wheel 80-100 kN Statis Roller	hour	1.000	969.00	969.00	P&M-059
		c) Material					
		Cost of water	KL	24.000	71.00	1704.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				2330.80	
		e) Overhead charges @ 10 % on (a+b+c+d)				1389.23	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1528.16	
		g) Cess @ 1% on (a+b+c+d+e+f)				168.10	
		Rate for 100 cum = a+b+c+d+e+f+g				16977.81	
		Rate per cum = (a+b+c+d+e+f+g)/100				169.78	
					say	170.00	
		<p>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.</p>					
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	551.00	22.04	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) Machinery					
		Hydraulic excavator 1 cum bucket capacity @ 60 cum per hour	hour	1.670	2044.00	3413.48	P&M-026
		Tipper 10 tonne capacity	tonne.km	175xL	18.00	9450.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				945.00	
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5045.00	2522.50	P&M-014
		Motor grader for grading @ 50 cum per hour	hour	2.000	3247.00	6494.00	P&M-032
		Water tanker with 6 km lead	hour	4.000	724.00	2896.00	P&M-060
		Three wheel 80-100 kN Statis Roller	hour	1.250	969.00	1211.25	P&M-059
		c) Material					
		Cost of water	KL	24.000	71.00	1704.00	M-189
		Compensation for earth taken from private land	cum	100.000	0.00	0.00	M-092
		d) GST (multiplying factor 0.2016) on (a+b+c)				5862.99	
		e) Overhead charges @ 10 % on (a+b+c+d)				3494.53	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				3843.98	
		g) Cess @ 1% on (a+b+c+d+e+f)				422.84	
		Cost for 100 cum = a+b+c+d+e+f+g				42706.61	
		Rate per cum = (a+b+c+d+e+f+g)/100				427.07	
					say	427.00	

- 3.19** 305.3.4 **Compacting Original Ground**
Case-1 **Compacting original ground supporting sub-grade**

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EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
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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	551.00	66.12	L-12
Mazdoor	day	3.000	424.00	1272.00	L-13

b) Machinery

Tractor with ripper attachment	hour	9.000	511.00	4599.00	P&M-055
Motor grader for grading	hour	6.000	3247.00	19482.00	P&M-032
Water tanker 6 KL capacity	hour	4.000	724.00	2896.00	P&M-060
Three wheel 80-100 kN Statis Roller	hour	7.500	969.00	7267.50	P&M-059

c) Material

Cost of water	KL	24.000	71.00	1704.00	M-189
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d) GST (multiplying factor 0.2016) on (a+b+c)

7516.98

e) Overhead charges @ 10 % on (a+b+c+d)

4480.36

f) Contractor's profit @ 10 % on (a+b+c+d+e)

4928.40

g) Cess @ 1% on (a+b+c+d+e+f)

542.12

Cost for 600 cum = a+b+c+d+e+f+g

54754.48

Rate per cum = (a+b+c+d+e+f+g)/600

91.26

say 91.00

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	551.00	44.08	L-12
Mazdoor	day	2.000	424.00	848.00	L-13

b) Machinery

Tractor with ripper attachment	hour	6.000	511.00	3066.00	P&M-055
Three wheel 80-100 kN Statis Roller	hour	7.500	969.00	7267.50	P&M-059
Water tanker 6 KL capacity	hour	4.000	724.00	2896.00	P&M-060

c) Material

Cost of water	KL	24.000	71.00	1704.00	M-189
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d) GST (multiplying factor 0.2016) on (a+b+c)

3190.44

e) Overhead charges @ 10 % on (a+b+c+d)

1901.60

f) Contractor's profit @ 10 % on (a+b+c+d+e)

2091.76

g) Cess @ 1% on (a+b+c+d+e+f)

230.09

Cost for 600 cum = (a+b+c+d+e+f+g)

23239.47

Rate per sqm = (a+b+c+d+e+f+g)/600

38.73

say 39.00

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	551.00	110.20	L-12
Mazdoor	day	5.000	424.00	2120.00	L-13

b) Machinery

Dozer 80 HP @ 100 cum per hour	hour	0.100	5045.00	504.50	P&M-014
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EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
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c)		GST (multiplying factor 0.2016) on (a+b)				551.32	
d)		Overhead charges @ 10 % on (a+b+c)				328.60	
e)		Contractor's profit @ 10 % on (a+b+c+d)				361.46	
f)		Cess @ 1% on (a+b+c+d+e)				39.76	
		Cost for 10 cum = (a+b+c+d+e+f)				4015.84	
		Rate per cum = (a+b+c+d+e+f)/10				401.58	
						say 402.00	

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	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
b)		Machinery					
		Dozer, 80 HP	hour	6.000	5045.00	30270.00	P&M-014
c)		GST (multiplying factor 0.2016) on (a+b)				6282.28	
d)		Overhead charges @ 10 % on (a+b+c)				3744.44	
e)		Contractor's profit @ 10 % on (a+b+c+d)				4118.88	
f)		Cess @ 1% on (a+b+c+d+e)				453.08	
		Cost for 300 cum = (a+b+c+d+e+f)				45760.76	
		Rate per cum = (a+b+c+d+e+f)/300				152.54	
						say 153.00	

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	551.00	66.12	L-12
		Mazdoor for preparation of ground and fetching of sods	day	3.000	424.00	1272.00	L-13
b)		Machinery					
		Water tanker including watering for 3 months	hour	2.000	724.00	1448.00	P&M-060
		Tractor-trolley	hour	1.000	530.00	530.00	P&M-053
c)		Material					
		Farm yard manure @ 0.18 cum per 100 sqm at site of work	cum	0.180	141.00	25.38	M-167
		Cost of water	KL	12.000	71.00	852.00	M-189
c)		GST (multiplying factor 0.2016) on (a+b)				845.41	
e)		Overhead charges @ 10 % on (a+b+c+d)				503.89	
f)		Contractor's profit @ 10 % on (a+b+c+d+e)				554.28	
g)		Cess @ 1% on (a+b+c+d+e+f)				60.97	
		Cost for 100 sqm = a+b+c+d+e+f+g				6158.05	
		Rate per 100 sqm = (a+b+c+d+e+f+g)/100				61.58	
						say 62.00	

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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. <i>Unit = sqm</i> <i>Taking output = 240 sqm</i>					
		a) Labour					
		Mate	day	0.400	551.00	220.40	L-12
		Mazdoor	day	10.000	424.00	4240.00	L-13
		b) Machinery					
		Water tanker 6 KL capacity including watering for 3 months	hour	14.000	724.00	10136.00	P&M-060
		Tractor-trolley	hour	2.400	530.00	1272.00	P&M-053
		c) Material					
		Seeds	kg	3.600	354.00	1274.40	M-162
		Sludge/Farm yard manure @ 0.18 cum per 100 sqm	cum	0.430	141.00	60.63	M-167
		Bitumen Emulsion	litre	55.200	55.00	3036.00	M-077
		Jute netting, open weave, 2.5 cm square opening	sqm	264.000	15.00	3960.00	M-121
		Cost of water for 3 months	KL	84.000	71.00	5964.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				6080.95	
		e) Overhead charges @ 10 % on (a+b+c+d)				3624.44	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				3986.88	
		g) Cess @ 1% on (a+b+c+d+e+f)				438.56	
		Cost for 240 sqm = a+b+c+d+e+f+g				44294.26	
		Rate per sqm = (a+b+c+d+e+f+g)/240				184.56	
					say	185.00	
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) <i>Unit = metre</i> <i>Taking output = 10 metres</i>					
		A Mechanical means					
		a) Labour					
		Mate	day	0.010	551.00	5.51	L-12
		Mazdoor for dressing of bed and side of drain	day	0.250	424.00	106.00	L-13
		b) Machinery					
		Hydraulic Excavator 0.3 cum bucket capacity @ 30 metres per hour	hour	0.330	2044.00	674.52	P&M-026
		c) GST (multiplying factor 0.2016) on (a+b)				158.46	
		d) Overhead charges @ 10 % on (a+b+c)				94.45	
		e) Contractor's profit @ 10 % on (a+b+c+d)				103.89	
		f) Cess @ 1% on (a+b+c+d+e)				11.43	
		Cost for 10 metres = a+b+c+d+e+f				1154.26	
		Rate per metre = (a+b+c+d+e+f)/10				115.43	
					say	115.00	
3.24		B Manual Means					
		a) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate in Rs.	Cost in Rs.	Remarks/ Input ref.
		b) GST (multiplying factor 0.2016) on (a)				179.84	
		c) Overhead charges @ 10 % on (a+b)				107.19	
		d) Contractor's profit @ 10 % on (a+b+c)				117.91	
		e) Cess @ 1% on (a+b+c+d)				12.97	
		Cost for 10 metres = a+b+c+d+e				1309.99	
		Rate per metre = (a+b+c+d+e)/10				131.00	
					say	<u>131.00</u>	
		<p>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.</p>					
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.					
		<i>Unit = metre</i>					
		<i>Taking output = 10 metres</i>					
		A Mechanical Means					
		a) Labour					
		Mate	day	0.020	551.00	11.02	L-12
		Mazdoor for dressing of bed and side of drain	day	0.500	424.00	212.00	L-13
		b) Machinery					
		Hydraulic Excavator 0.3 cum bucket capacity @ 15 metres per hour	hour	0.670	2044.00	1369.48	P&M-026
		c) GST (multiplying factor 0.2016) on (a+b)				321.05	
		d) Overhead charges @ 10 % on (a+b+c)				191.36	
		e) Contractor's profit @ 10 % on (a+b+c+d)				210.49	
		f) Cess @ 1% on (a+b+c+d+e)				23.15	
		Cost for 10 metres = a+b+c+d+e+f				2338.55	
		Rate per metre = (a+b+c+d+e+f)/10				233.86	
					say	<u>234.00</u>	
3.25		B Manual Means					
		a) Labour					
		Mate	day	0.120	551.00	66.12	L-12
		Mazdoor	day	3.000	424.00	1272.00	L-13
		b) GST (multiplying factor 0.2016) on (a)				269.76	
		c) Overhead charges @ 10 % on (a+b)				160.79	
		d) Contractor's profit @ 10 % on (a+b+c)				176.87	
		e) Cess @ 1% on (a+b+c+d)				19.46	
		Cost for 10 metres = a+b+c+d+e				1965.00	
		Rate per metre = (a+b+c+d+e)/10				196.50	
					say	<u>197.00</u>	
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.					
		<i>Unit = metre</i>					

CHAPTER - 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

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	551.00	22.04	L-12
		Mazdoor for excavation and back filling	day	2.000	424.00	848.00	L-13
		b) Material					
		Perforated pipe of cement concrete, internal dia 100 mm	metre	10.000	150.00	1500.00	M-135
		Crushed stone as per table 300-3	cum	2.400	1450.00	3480.00	M-012
		c) GST (multiplying factor 0.2016) on (a+b)				1179.37	
		d) Overhead charges @ 10 % on (a+b+c)				702.94	
		e) Contractor's profit @ 10 % on (a+b+c+d)				773.24	
		f) Cess @ 1% on (a+b+c+d+e)				85.06	
		Cost for 10 metres = a+b+c+d+e+f				8590.65	
		Rate per metre = (a+b+c+d+e+f)/10				859.07	
					say	<u>859.00</u>	
	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	551.00	11.02	L-12
		Mazdoor for excavation and back filling with aggregates	day	1.500	424.00	636.00	L-13
		b) Material					
		Crushed stone as per table 300-3	cum	1.350	1450.00	1957.50	M-012
		c) GST (multiplying factor 0.2016) on (a+b)				525.07	
		d) Overhead charges @ 10 % on (a+b+c)				312.96	
		e) Contractor's profit @ 10 % on (a+b+c+d)				344.26	
		f) Cess @ 1% on (a+b+c+d+e)				37.87	
		Cost for 10 metres = a+b+c+d+e+f				3824.68	
		Rate per metre = (a+b+c+d+e+f)/10				382.47	
					say	<u>382.00</u>	
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 slab 10 cm in thickness on urban roads.					
		Unit = Running metre					
		Taking output = one metre					
		a) Earthwork in soil	cum	1.500	78.00	117.00	Item No. 3.13
		b) RCC work M-20	cum	0.500	9665.00	4832.50	Item 12.8 (C) RCC
		Rate per metre = (a+b) (Including GST,OH,CP &Cess)				4949.50	
		Rates for these items may be taken from chapters on earth work and substructures respectively.			say	<u>4950.00</u>	
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	551.00	154.28	L-12
		Mazdoor	day	6.000	424.00	2544.00	L-13

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EARTH WORK, EROSION CONTROL AND DRAINAGE

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	508.00	508.00	L-15
		b) Machinery					
		Smooth 3 wheeled steel roller 8-10 tonnes	hour	3.000	783.00	2349.00	P&M-044
		Water tanker 6 KL, one trip per hour	hour	3.000	724.00	2172.00	P&M-060
		c) Material					
		Cost of water	KL	18.000	71.00	1278.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				1815.46	
		e) Overhead charges @ 10 % on (a+b+c+d)				1082.07	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1190.28	
		g) Cess @ 1% on (a+b+c+d+e+f)				130.93	
		Cost for 3500 sqm = a+b+c+d+e+f+g				13224.02	
		Rate per sqm = (a+b+c+d+e+f+g)/3500				3.78	
					say	4.00	

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	551.00	22.04	L-12
	Mazdoor	day	1.500	424.00	636.00	L-13
b)	Machinery					
	Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5045.00	2522.50	P&M-014
	Three wheel 80-100 kN Statis Roller	hour	1.000	969.00	969.00	P&M-059
	Water tanker 6 KL, one trip per hour	hour	2.000	724.00	1448.00	P&M-060
c)	Material					
	Cost of water	KL	12.000	71.00	852.00	M-189
d)	GST (multiplying factor 0.2016) on (a+b+c)				1300.23	
e)	Overhead charges @ 10 % on (a+b+c+d)				774.98	
f)	Contractor's profit @ 10 % on (a+b+c+d+e)				852.48	
g)	Cess @ 1% on (a+b+c+d+e+f)				93.77	
Cost for 100 cum = a+b+c+d+e+f+g					9471.00	
Rate per cum = (a+b+c+d+e+f+g)/100					94.71	
					say	95.00

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	551.00	132.24	L-12	
Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	424.00	2544.00	L-13	
b) Machinery						
Dozer D-50 @ 43.28 cum per hour	hour	6.000	3398.00	20388.00	P&M-014	
Front end loader	hour	6.000	1838.00	11028.00	P&M-017	

CHAPTER - 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

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	916.00	10992.00	P&M-048
		c) GST (multiplying factor 0.2016) on (a+b)				9088.98	
		d) Overhead charges @ 10 % on (a+b+c)				5417.32	
		e) Contractor's profit @ 10 % on (a+b+c+d)				5959.05	
		f) Cess @ 1% on (a+b+c+d+e)				655.50	
		Cost for 260 cum = a+b+c+d+e+f				66205.09	
		Rate per cum = (a+b+c+d+e+f)/260				254.63	
					say	<u>255.00</u>	
		(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	551.00	132.24	L-12
		Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	424.00	2544.00	L-13
		b) Machinery					
		Dozer D-50 @ 43.28 cum per hour	hour	6.000	3398.00	20388.00	P&M-014
		c) GST (multiplying factor 0.2016) on (a+b)				4649.75	
		d) Overhead charges @ 10 % on (a+b+c)				2771.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3048.54	
		f) Cess @ 1% on (a+b+c+d+e)				335.34	
		Cost for 260 cum = a+b+c+d+e+f				33869.27	
		Rate per cum = (a+b+c+d+e+f)/260				130.27	
					say	<u>130.00</u>	
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	551.00	176.32	L-12
		Mazdoor	day	8.000	424.00	3392.00	L-13
		b) Machinery					
		Dozer D-50 @ 28.32 cum per hour	hour	6.000	3398.00	20388.00	P&M-014
		Front end loader	hour	7.000	1838.00	12866.00	P&M-017
		Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	916.00	6412.00	P&M-048
		c) GST (multiplying factor 0.2016) on (a+b)				8716.04	
		d) Overhead charges @ 10 % on (a+b+c)				5195.04	
		e) Contractor's profit @ 10 % on (a+b+c+d)				5714.54	
		f) Cess @ 1% on (a+b+c+d+e)				628.60	
		Cost for 170 cum = a+b+c+d+e+f				63488.54	
		Rate per cum = (a+b+c+d+e+f)/170				373.46	
					say	<u>373.00</u>	
		(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					

CHAPTER - 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

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	551.00	176.32	L-12
		Mazdoor	day	8.000	424.00	3392.00	L-13
		b) Machinery					
		Dozer D-50 @ 28.32 cum per hour	hour	6.000	3398.00	20388.00	P&M-014
		c) GST (multiplying factor 0.2016) on (a+b)				4829.59	
		d) Overhead charges @ 10 % on (a+b+c)				2878.59	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3166.45	
		f) Cess @ 1% on (a+b+c+d+e)				348.31	
		Cost for 170 cum = a+b+c+d+e+f				35179.26	
		Rate per cum = (a+b+c+d+e+f)/170				206.94	
					say	<u>207.00</u>	
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	551.00	269.99	L-12
		Mazdoor	day	10.000	424.00	4240.00	L-13
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		b) Machinery					
		Dozer D-50 @ 28.32 cum per hour	hour	6.000	3398.00	20388.00	P&M-014
		Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	658.00	3290.00	P&M-001
		Front end loader	hour	7.000	1838.00	12866.00	P&M-017
		Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	916.00	6412.00	P&M-048
		c) Materials					
		Gelatine 80 per cent	kg	35.000	166.00	5810.00	M-104
		Electric Detonators @ 1 Detonator for 2	each	140.000	11.59	1622.60	M-094 /100
		Gelatine sticks of 125 gms each					
		d) GST (multiplying factor 0.2016) on (a+b+c)				11317.49	
		e) Overhead charges @ 10 % on (a+b+c+d)				6745.58	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				7420.14	
		g) Cess @ 1% on (a+b+c+d+e+f)				816.22	
		Cost for 170 cum = a+b+c+d+e+f+g				82437.77	
		Rate per cum = (a+b+c+d+e+f+g)/170				484.93	
					say	<u>485.00</u>	
		(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	551.00	269.99	L-12
		Mazdoor	day	10.000	424.00	4240.00	L-13
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		b) Machinery					
		Dozer D-50 @ 28.32 cum per hour	hour	6.000	3398.00	20388.00	P&M-014

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EARTH WORK, EROSION CONTROL AND DRAINAGE

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	658.00	3290.00	P&M-001
		c) Materials					
		Gelatine 80 per cent	kg	35.000	166.00	5810.00	M-104
		Electric Detonators @ 1 Detonator for 2	each	140.000	11.59	1622.60	M-094 /100
		Gelatine sticks of 125 gms each					
		d) GST (multiplying factor 0.2016) on (a+b+c)				7431.04	
		e) Overhead charges @ 10 % on (a+b+c+d)				4429.14	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				4872.05	
		g) Cess @ 1% on (a+b+c+d+e+f)				535.93	
		Cost for 170 cum = a+b+c+d+e+f+g				54128.50	
		Rate per cum = (a+b+c+d+e+f+g)/170				318.40	
					say	<u>318.00</u>	
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	551.00	1322.40	L-12
		Mazdoor (Unskilled)	day	60.000	424.00	25440.00	L-13
		b) GST (multiplying factor 0.2016) on (a)				5395.30	
		c) Overhead charges @ 10 % on (a+b)				3215.77	
		d) Contractor's profit @ 10 % on (a+b+c)				3537.35	
		e) Cess @ 1% on (a+b+c+d)				389.11	
		Cost for 120 cum = a+b+c+d+e				39299.93	
		Rate per cum = (a+b+c+d+e)/120				327.50	
					say	<u>328.00</u>	
		(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	424.00	84.80	L-13
		b) GST (multiplying factor 0.2016) on (a)				17.10	
		c) Overhead charges @ 10 % on (a+b)				10.19	
		d) Contractor's profit @ 10 % on (a+b+c)				11.21	
		e) Cess @ 1% on (a+b+c+d)				1.23	
		Cost for 1 cum = a+b+c+d+e				124.53	
		Rate per cum = (a+b+c+d+e)/1				124.53	
					say	<u>125.00</u>	
		(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	551.00	2909.28	L-12
		Mazdoor (Unskilled)	day	132.000	424.00	55968.00	L-13
		b) GST (multiplying factor 0.2016) on (a)				11869.66	
		c) Overhead charges @ 10 % on (a+b)				7074.69	

CHAPTER - 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

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)				7782.16	
		e) Cess @ 1% on (a+b+c+d)				856.04	
		Cost for 120 cum = a+b+c+d+e				86459.83	
		Rate per cum = (a+b+c+d+e)/120				720.50	
						say 721.00	
		(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	424.00	135.68	L-13
		b) GST (multiplying factor 0.2016) on (a)				27.35	
		c) Overhead charges @ 10 % on (a+b)				16.30	
		d) Contractor's profit @ 10 % on (a+b+c)				17.93	
		e) Cess @ 1% on (a+b+c+d)				1.97	
		Cost for 1 cum = a+b+c+d+e				199.23	
		Rate per cum = (a+b+c+d+e)/1				199.23	
						say 199.00	

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.

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

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	551.00	220.40	L-12
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		Mazdoor	day	8.000	424.00	3392.00	L-13
		b) Machinery					
		Wet mix plant @ 75 tonne capacity per hour	hour	6.000	1794.00	10764.00	P&M-093
		Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
		Water tanker 6 KL capacity 5 km lead with one trip per hour	hour	4.500	724.00	3258.00	P&M-060
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 10 tonne	tonne. km	450 x L	18.00	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	3247.00	19482.00	P&M-032
		Vibratory roller 8-10 t	hour	6.000	969.00	5814.00	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	900.00	129600.00	M-013
		9.5 mm to 2.36 mm @ 20 per cent (graded)	cum	57.000	780.00	44460.00	M-017
		2.36 mm below @ 30 per cent	cum	86.400	700.00	60480.00	M-020
		Cost of water	KL	27.000	71.00	1917.00	M-189
		OR					
		For Grading-II Material					
		26.5 mm to 9.5 mm @ 35 per cent	cum	100.800	850.00	85680.00	M-015
		9.5 mm to 2.36 mm @ 25 per cent (graded)	cum	72.000	780.00	56160.00	M-017
		2.36 mm below @ 40 per cent	cum	115.200	700.00	80640.00	M-020
		Cost of water	KL	27.000	71.00	1917.00	M-189
		OR					
		For Grading-III Material					
		9.5 mm to 4.75 mm @ 35 per cent	cum	100.800	800.00	80640.00	M-016
		4.75 mm to 2.36 mm @ 12.5 per cent	cum	36.000	750.00	27000.00	M-018
		2.36 mm below @ 52.5 per cent	cum	151.200	700.00	105840.00	M-020
		Cost of water	KL	27.000	71.00	1917.00	M-189
4.1A		(i) Rate per cum for grading-I Material					
		d) GST (multiplying factor 0.2016) on (a+b+c)				60125.47	
		e) Overhead charges @ 10 % on (a+b+c+d)				35836.69	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				39420.36	
		g) Cess @ 1% on (a+b+c+d+e+f)				4336.24	
		Cost for 225 cum = a+b+c+d+e+f+g				437960.16	
		Rate per cum = (a+b+c+d+e+f+g)/225				1946.49	
					say	<u>1946.00</u>	

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

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 (multiplying factor 0.2016) on (a+b+c)				57694.17	
		e) Overhead charges @ 10 % on (a+b+c+d)				34387.56	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				37826.31	
		g) Cess @ 1% on (a+b+c+d+e+f)				4160.89	
		Cost for 225 cum = a+b+c+d+e+f+g				420250.33	
		Rate per cum = (a+b+c+d+e+f+g)/225				1867.78	
					say	1868.00	
4.1A	(iii)	Rate per cum for grading-III Material					
		d) GST (multiplying factor 0.2016) on (a+b+c)				55879.77	
		e) Overhead charges @ 10 % on (a+b+c+d)				33306.12	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				36636.73	
		g) Cess @ 1% on (a+b+c+d+e+f)				4030.04	
		Cost for 225 cum = a+b+c+d+e+f+g				407034.06	
		Rate per cum = (a+b+c+d+e+f+g)/225				1809.04	
					say	1809.00	
	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	551.00	264.48	L-12
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		Mazdoor unskilled	day	10.000	424.00	4240.00	L-13
	b)	Machinery					
		Motor Grader 110 HP @ 50 cum	hour	6.000	3247.00	19482.00	P&M-032
		Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
		Tractor - Rotavator	hour	12.000	494.00	5928.00	P&M-054
		Water tanker 6 KL capacity	hour	3.000	724.00	2172.00	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	900.00	172800.00	M-013
		9.5 mm to 2.36 mm @ 20 per cent	cum	76.000	780.00	59280.00	M-017
		2.36 mm below @ 30 per cent	cum	115.200	700.00	80640.00	M-020
		Cost of water	KL	18.000	71.00	1278.00	M-189
		OR					
		For Grading-II Material					
		26.5 mm to 9.5 mm @ 35 per cent	cum	134.400	850.00	114240.00	M-015
		9.5 mm to 2.36 mm @ 25 per cent	cum	96.000	780.00	74880.00	M-017
		2.36 mm below @ 40 per cent	cum	153.600	700.00	107520.00	M-020
		Cost of water	KL	18.000	71.00	1278.00	M-189
		OR					
		For Grading-III Material					
		9.5 mm to 4.75 mm @ 35 per cent	cum	134.400	800.00	107520.00	M-016
		4.75 mm to 2.36 mm @ 12.5 per	cum	48.000	750.00	36000.00	M-018
		2.36 mm below @ 52.5 per cent	cum	201.600	700.00	141120.00	M-020
		Cost of water	KL	18.000	71.00	1278.00	M-189
4.1B	(i)	Rate per cum for grading-I Material					
		d) GST (multiplying factor 0.2016) on (a+b+c)				71147.56	

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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)				42406.20	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				46646.82	
		g) Cess @ 1% on (a+b+c+d+e+f)				5131.15	
		Cost for 300 cum = a+b+c+d+e+f+g				518246.21	
		Rate per cum = (a+b+c+d+e+f+g)/300				1727.49	
					say	<u>1727.00</u>	
4.1B	(ii)	Rate per cum for grading-II Material					
		d) GST (multiplying factor 0.2016) on (a+b+c)				67905.83	
		e) Overhead charges @ 10 % on (a+b+c+d)				40474.03	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				44521.43	
		g) Cess @ 1% on (a+b+c+d+e+f)				4897.36	
		Cost for 300 cum = a+b+c+d+e+f+g				494633.13	
		Rate per cum = (a+b+c+d+e+f+g)/300				1648.78	
					say	<u>1649.00</u>	
4.1B	(iii)	Rate per cum for grading-III Material					
		d) GST (multiplying factor 0.2016) on (a+b+c)				65486.63	
		e) Overhead charges @ 10 % on (a+b+c+d)				39032.11	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				42935.32	
		g) Cess @ 1% on (a+b+c+d+e+f)				4722.89	
		Cost for 300 cum = a+b+c+d+e+f+g				477011.43	
		Rate per cum = (a+b+c+d+e+f+g)/300				1590.04	
					say	<u>1590.00</u>	
		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	551.00	220.40	L-12
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		Mazdoor	day	8.000	424.00	3392.00	L-13
		b) Machinery					
		Mortar Grader 110 HP @ 50 cum per hour	hour	6.000	3247.00	19482.00	P&M-032
		Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
		Water tanker 6 KL capacity	hour	3.000	724.00	2172.00	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	900.00	120960.00	M-029
		26.5 mm to 4.75 mm @ 45 per cent	cum	172.800	850.00	146880.00	M-026
		2.36 mm below @ 20 per cent (Coarse Sand)	cum	76.800	700.00	53760.00	M-022
		Cost of water	KL	18.000	71.00	1278.00	M-189
		OR					
		For Grading-II Material					
		26.5 mm to 4.75 mm @ 75 per cent	cum	288.000	850.00	244800.00	M-026
		2.36 mm below @ 25 per cent	cum	96.000	700.00	67200.00	M-022
		Cost of water	KL	18.000	71.00	1278.00	M-189
		OR					

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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	800.00	204000.00	M-025
		2.36 mm below @ 34 per cent	cum	129.000	700.00	90300.00	M-022
		Cost of water	KL	18.000	71.00	1278.00	M-189
4.2	(i)	Rate per cum for grading-I Material					
	d)	GST (multiplying factor 0.2016) on (a+b+c)				71562.84	
	e)	Overhead charges @ 10 % on (a+b+c+d)				42653.72	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				46919.10	
	g)	Cess @ 1% on (a+b+c+d+e+f)				5161.10	
		Cost for 300 cum = a+b+c+d+e+f+g				521271.16	
		Rate per cum = (a+b+c+d+e+f+g)/300				1737.57	
					say	1738.00	
4.2	(ii)	Rate per cum for grading-II Material					
	d)	GST (multiplying factor 0.2016) on (a+b+c)				69627.48	
	e)	Overhead charges @ 10 % on (a+b+c+d)				41500.19	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				45650.21	
	g)	Cess @ 1% on (a+b+c+d+e+f)				5021.52	
		Cost for 300 cum = a+b+c+d+e+f+g				507173.80	
		Rate per cum = (a+b+c+d+e+f+g)/300				1690.58	
					say	1691.00	
4.2	(iii)	Rate per cum for grading-III Material					
	d)	GST (multiplying factor 0.2016) on (a+b+c)				66059.16	
	e)	Overhead charges @ 10 % on (a+b+c+d)				39373.36	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				43310.69	
	g)	Cess @ 1% on (a+b+c+d+e+f)				4764.18	
		Cost for 300 cum = a+b+c+d+e+f+g				481181.79	
		Rate per cum = (a+b+c+d+e+f+g)/300				1603.94	
					say	1604.00	
	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	551.00	198.36	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	508.00	508.00	L-15
		Mazdoor for spraying lime	day	8.000	424.00	3392.00	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	511.00	6132.00	P&M-055
		Motor Grader 110 HP @ 50 cum per hour	hour	6.000	3247.00	19482.00	P&M-032
		Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	969.00	3779.10	P&M-059
		Water tanker 6 KL capacity	hour	12.000	724.00	8688.00	P&M-060
	c)	Material					
		Lime at site	tonne	15.750	15000.00	236250.00	M-188
		Cost of water	KL	72.000	71.00	5112.00	M-189
	d)	GST (multiplying factor 0.2016) on (a+b+c)				57161.96	

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Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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e)		Overhead charges @ 10 % on (a+b+c+d)				34070.34	
f)		Contractor's profit @ 10 % on (a+b+c+d+e)				37477.38	
g)		Cess @ 1% on (a+b+c+d+e+f)				4122.51	
		Cost for 300 cum = a+b+c+d+e+f+g				416373.65	
		Rate per cum = (a+b+c+d+e+f+g)/300				1387.91	
					say	1388.00	

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	551.00	793.44	L-12
	Mazdoor skilled	day	1.000	508.00	508.00	L-15
	Mazdoor	day	35.000	424.00	14840.00	L-13
b)	Machinery					
	Three wheel 80-100 kN Static Roller	hour	2.500	969.00	2422.50	P&M-059
	Water tanker 6 KL capacity	hour	6.000	724.00	4344.00	P&M-060
c)	Material					
	Lime at site	tonne	8.000	15000.00	120000.00	M-188
	Cost of water	KL	36.000	71.00	2556.00	M-189
d)	GST (multiplying factor 0.2016) on (a+b+c)				29325.53	
e)	Overhead charges @ 10 % on (a+b+c+d)				17478.95	
f)	Contractor's profit @ 10 % on (a+b+c+d+e)				19226.84	
g)	Cess @ 1% on (a+b+c+d+e+f)				2114.95	
	Cost for 150 cum= a+b+c+d+e+f+g				213610.21	
	Rate per cum =(a+b+c+d+e+f+g)/150				1424.07	
					say	1424.00

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	551.00	264.48	L-12
	Mazdoor skilled	day	2.000	508.00	1016.00	L-15
	Mazdoor	day	10.000	424.00	4240.00	L-13
b)	Machinery					
	Excavator 1.00 cum bucket capacity	hour	6.000	2044.00	12264.00	P&M-026
	Tipper for carriage of soil	tonne. km	525 x L	18.00	28350.00	Lead =3 km & P&M-058
	Add 10 per cent of cost of carriage to cover cost of loading and unloading				2835.00	
	Motor Grader 110 HP @ 50 cum per hour	hour	6.000	3247.00	19482.00	P&M-032
	Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
	Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	494.00	5928.00	P&M-054
	Water tanker 6 KL capacity	hour	12.000	724.00	8688.00	P&M-060

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Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
4.5	403	c) Material					
		Lime at site	tonne	15.750	15000.00	236250.00	M-188
		Cost of water	KL	72.000	71.00	5112.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				66577.09	
		e) Overhead charges @ 10 % on (a+b+c+d)				39682.06	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				43650.26	
		g) Cess @ 1% on (a+b+c+d+e+f)				4801.53	
		Cost for 300 cum = a+b+c+d+e+f+g				484954.42	
		Rate per cum= (a+b+c+d+e+f+g)/300				1616.51	
					say	1617.00	
		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					
4.8	404.3.2	a) Labour					
		Mate	day	0.480	551.00	264.48	L-12
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		Mazdoor	day	10.000	424.00	4240.00	L-13
		b) Machinery					
		Excavator 1.00 cum bucket capacity	hour	6.000	2044.00	12264.00	P&M-026
		Tipper for carriage of soil	tonne.km	525 x L	18.00	28350.00	Lead =3 km & P&M-026
		Add 10 per cent of cost of carriage to cover cost of loading and unloading				2835.00	
		10.75	hour	6.000	3247.00	19482.00	P&M-032
		Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
		Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	494.00	5928.00	P&M-054
		Water tanker 6 KL capacity	hour	12.000	724.00	8688.00	P&M-060
		c) Material					
		Cement at site (@ 4 per cent of 525 tonne)	tonne	21.000	9100.00	191100.00	M-081
		Cost of water	KL	72.000	71.00	5112.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				57474.85	
		e) Overhead charges @ 10 % on (a+b+c+d)				34256.83	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				37682.52	
		g) Cess @ 1% on (a+b+c+d+e+f)				4145.08	
		Cost for 300 cum = a+b+c+d+e+f+g				418652.76	
		Rate per cum= (a+b+c+d+e+f+g)/300				1395.51	
					say	1396.00	
		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	551.00	506.92	L-12
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		Mazdoor	day	21.000	424.00	8904.00	L-13
		b) Machinery					
		Motor Grader 110 HP	hour	6.000	3247.00	19482.00	P&M-032

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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	969.00	5814.00	P&M-059
		Water tanker 6 KL capacity	hour	18.000	724.00	13032.00	P&M-060
		c) Material					
		Screening type 'B' or coarse sand	cum	720.000	650.00	468000.00	M-004
		Cost of water	KL	108.000	71.00	7668.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				105723.66	
		d) Overhead charges @ 10 % on (a+b+c)				63014.66	
		e) Contractor's profit @ 10 % on (a+b+c+d)				69316.12	
		f) Cess @ 1% on (a+b+c+d+e)				7624.77	
		Cost for 600 cum = a+b+c+d+e				770102.13	
		Rate per cum = (a+b+c+d+e)/600				1283.50	
					say	1284.00	
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	551.00	5554.08	L-12
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		Mazdoor	day	250.000	424.00	106000.00	L-13
		b) Machinery					
		Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
		or					
		Smooth 3 wheeled steel roller @ 30cum/hour	hour	12.000			
		Water tanker 6 KL capacity	hour	24.000	724.00	17376.00	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	950.00	413820.00	M-039
		Stone Screening					
		Type A 13.2 mm for grading-I @ 0.27 cum per 10 sqm	cum	97.200	1820.00	176904.00	M-052
		OR					
		Crushable type such as Moorum or Gravel for grading-I @ 0.30 cum per 10 sqm	cum	108.000	350.00	37800.00	M-007
		Binding material					
		Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	350.00	10080.00	M-007
		Cost of water	KL	144.000	71.00	10224.00	M-189
4.9A (i)	(a)	Using Scrining Crushable type such as Moorum or Gravel					
		d) GST (multiplying factor 0.2016) on (a+b+c)				120476.98	
		e) Overhead charges @ 10 % on (a+b+c+d)				71808.11	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				78988.92	
		g) Cess @ 1% on (a+b+c+d+e+f)				8688.78	
		Cost for 360 cum = a+b+c+d+e+f+g				877566.87	
		Rate per cum = (a+b+c+d+e+f+g)/360				2437.69	
					say	2438.00	
		OR					

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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 (multiplying factor 0.2016) on (a+b+c)				150552.48	
		e) Overhead charges @ 10 % on (a+b+c+d)				89734.06	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				98707.46	
		g) Cess @ 1% on (a+b+c+d+e+f)				10857.82	
		Cost for 360 cum = a+b+c+d+e+f+g				1096639.90	
		Rate per cum = (a+b+c+d+e+f+g)/360				3046.22	
					say	<u>3046.00</u>	
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	980.00	426888.00	M-038
		b) Stone Screening					
		Type A 13.2 mm for grading-II@ 0.12 cum per 10 sqm	cum	57.600	1820.00	104832.00	M-052
		OR					
		Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	350.00	36956.50	M-007
		OR					
		Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1800.00	155520.00	M-051
		c) Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	350.00	10080.00	M-007
		Cost of water	KL	144.000	71.00	10224.00	M-189
4.9A (ii)	(a)	Using Scrining Crushable type such as Moorum or Gravel					
		d) GST (multiplying factor 0.2016) on (a+b+c)				122941.44	
		e) Overhead charges @ 10 % on (a+b+c+d)				73277.00	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				80604.70	
		g) Cess @ 1% on (a+b+c+d+e+f)				8866.52	
		Cost for 360 cum = a+b+c+d+e+f+g				895518.24	
		Rate per cum = (a+b+c+d+e+f+g)/360				2487.55	
					say	<u>2488.00</u>	
		OR					
4.9A (ii)	(b)	Using Scrining Type-A (13.2mm agg.)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				138657.27	
		e) Overhead charges @ 10 % on (a+b+c+d)				82644.14	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				90908.55	
		g) Cess @ 1% on (a+b+c+d+e+f)				9999.94	
		Cost for 360 cum = a+b+c+d+e+f+g				1009993.98	
		Rate per cum = (a+b+c+d+e+f+g)/360				2805.54	
					say	<u>2806.00</u>	
4.9A (ii)	(c)	Using Scrining Type-B (11.2mm agg.)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				148875.97	
		e) Overhead charges @ 10 % on (a+b+c+d)				88734.81	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				97608.29	
		g) Cess @ 1% on (a+b+c+d+e+f)				10736.91	
		Cost for 360 cum = a+b+c+d+e+f+g				1084428.06	
		Rate per cum = (a+b+c+d+e+f+g)/360				3012.30	
					say	<u>3012.00</u>	

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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	1010.00	439956.00	M-036
		Stone Screening					
		Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1800.00	155520.00	M-051
		OR					
		Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	350.00	36956.50	M-007
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	350.00	10080.00	M-007
		Cost of water	KL	144.000	71.00	10224.00	M-189
4.9A (iii)	(a)	Using Scrining Crushable type such as Moorum or Gravel					
		d) GST (multiplying factor 0.2016) on (a+b+c)				125575.95	
		e) Overhead charges @ 10 % on (a+b+c+d)				74847.25	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				82331.98	
		g) Cess @ 1% on (a+b+c+d+e+f)				9000.98	
		Cost for 360 cum = a+b+c+d+e+f+g				914652.74	
		Rate per cum = (a+b+c+d+e+f+g)/360				2540.70	
					say	2541.00	
		OR					
4.9A (iii)	(b)	Using Scrining Type-B (11.2mm agg.)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				151510.48	
		e) Overhead charges @ 10 % on (a+b+c+d)				90305.06	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				99335.56	
		g) Cess @ 1% on (a+b+c+d+e+f)				10926.91	
		Cost for 360 cum = a+b+c+d+e+f+g				1103618.09	
		Rate per cum = (a+b+c+d+e+f+g)/360				3065.61	
					say	3066.00	
		(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	551.00	374.68	L-12
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		Mazdoor	day	15.000	424.00	6360.00	L-13
	b)	Machinery					
		Motor grader 110 HP @ 50cum/hr. for spreading	hour	7.200	3247.00	23378.40	P&M-032
		Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
		or					
		Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
		Water tanker 6 KL capacity	hour	24.000	724.00	17376.00	P&M-060
4.9B	(i)	Grading-I					
		Aggregate					

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Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	950.00	413820.00	M-039
		Stone Screening					
		Type A 13.2 mm for grading-I @ 0.27 cum per 10 sqm	cum	97.200	1820.00	176904.00	M-052
		OR					
		Crushable type such as Moorum or Gravel for grading-I @ 0.30 cum per 10 sqm	cum	108.000	350.00	37800.00	M-007
		Binding material					
		Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	350.00	10080.00	M-007
		Cost of water	KL	144.000	71.00	10224.00	M-189
4.9B (i)	(a)	Using Scrining Crushable type such as Moorum or Gravel					
		d) GST (multiplying factor 0.2016) on (a+b+c)				104058.48	
		e) Overhead charges @ 10 % on (a+b+c+d)				62022.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				68224.37	
		g) Cess @ 1% on (a+b+c+d+e+f)				7504.68	
		Cost for 360 cum = a+b+c+d+e+f+g				757972.77	
		Rate per cum = (a+b+c+d+e+f+g)/360				2105.48	
					say	<u>2105.00</u>	
		OR					
4.9B (i)	(b)	Using Scrining Type-A (13.2mm agg.)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				134133.97	
		e) Overhead charges @ 10 % on (a+b+c+d)				79948.11	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				87942.92	
		g) Cess @ 1% on (a+b+c+d+e+f)				9669.97	
		Cost for 360 cum = a+b+c+d+e+f+g				977042.05	
		Rate per cum = (a+b+c+d+e+f+g)/360				2714.01	
					say	<u>2714.00</u>	
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	980.00	426888.00	M-038
		Stone Screening					
		Type A 13.2 mm for grading-II@ 0.12 cum per 10 sqm	cum	57.600	1820.00	104832.00	M-052
		OR					
		Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	350.00	36956.50	M-007
		OR					
		Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	1800.00	155520.00	M-051
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	350.00	10080.00	M-007
		Cost of water	KL	144.000	71.00	10224.00	M-189
4.9B (ii)	(a)	Using Scrining Crushable type such as Moorum or Gravel					
		d) GST (multiplying factor 0.2016) on (a+b+c)				106522.94	
		e) Overhead charges @ 10 % on (a+b+c+d)				63491.05	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				69840.16	
		g) Cess @ 1% on (a+b+c+d+e+f)				7682.42	
		Cost for 360 cum = a+b+c+d+e+f+g				775924.15	

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Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Rate per cum = (a+b+c+d+e+f+g)/360				2155.34	
					say	<u>2155.00</u>	
		OR					
4.9B (ii)	(b)	Using Scrining Type-A (13.2mm agg.)					
	d)	GST (multiplying factor 0.2016) on (a+b+c)				122238.76	
	e)	Overhead charges @ 10 % on (a+b+c+d)				72858.18	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				80144.00	
	g)	Cess @ 1% on (a+b+c+d+e+f)				8812.09	
		Cost for 360 cum = a+b+c+d+e+f+g				890396.11	
		Rate per cum = (a+b+c+d+e+f+g)/360				2473.32	
					say	<u>2473.00</u>	
4.9B (ii)	(c)	Using Scrining Type-B (11.2mm agg.)					
	d)	GST (multiplying factor 0.2016) on (a+b+c)				132457.47	
	e)	Overhead charges @ 10 % on (a+b+c+d)				78948.86	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				86843.74	
	g)	Cess @ 1% on (a+b+c+d+e+f)				9552.81	
		Cost for 360 cum = a+b+c+d+e+f+g				964833.96	
		Rate per cum = (a+b+c+d+e+f+g)/360				2680.09	
					say	<u>2680.00</u>	
4.9B	(iii)	c)Grading-III					
		Aggregate					
		Grading-III 53 mm to 22.4 mm@	cum	435.600	1010.00	439956.00	M-036
		0.91 cum per 10 sqm for compacted thickness of 75 mm					
		Stone Screening					
		Type B11.2 mm for grading-III @	cum	86.400	1800.00	155520.00	M-051
		0.18 cum per 10 sqm					
		OR					
		Crushable type such as Moorum or Gravel for grading II & III @ 0.22 cum per 10 sqm	cum	105.590	350.00	36956.50	M-007
		Binding material					
		Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	350.00	10080.00	M-007
		Cost of water	KL	144.000	71.00	10224.00	M-189
4.9B (iii)	(a)	Using Scrining Crushable type such as Moorum or Gravel					
	d)	GST (multiplying factor 0.2016) on (a+b+c)				109157.44	
	e)	Overhead charges @ 10 % on (a+b+c+d)				65061.30	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				71567.43	
	g)	Cess @ 1% on (a+b+c+d+e+f)				7872.42	
		Cost for 360 cum = a+b+c+d+e+f+g				795114.17	
		Rate per cum = (a+b+c+d+e+f+g)/360				2208.65	
					say	<u>2209.00</u>	
		OR					
4.9B (iii)	(b)	Using Scrining Type-B (11.2mm agg.)					
	d)	GST (multiplying factor 0.2016) on (a+b+c)				135091.97	
	e)	Overhead charges @ 10 % on (a+b+c+d)				80519.11	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				88571.02	
	g)	Cess @ 1% on (a+b+c+d+e+f)				9742.81	
		Cost for 360 cum = a+b+c+d+e+f+g				984023.99	
		Rate per cum = (a+b+c+d+e+f+g)/360				2733.40	
					say	<u>2733.00</u>	

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Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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Note As three wheeled smooth rollers are also very commonly used, the same has been provided as an alternative.

4.10 405

Crushed Cement Concrete Sub-base / Base

Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L km., laying and compacting the same as sub base/ base course, constructed as WBM to clause 404 except the use of screening or binding Material.

Unit = cum

Taking output = 360 cum

a) Labour

Mate	day	4.160	551.00	2292.16	L-12
Mazdoor skilled	day	2.000	508.00	1016.00	L-15
Mazdoor for crushing broken cement concrete pavement/slabs into aggregate	day	102.000	424.00	43248.00	L-13

b) Machinery

Motor Grader, 110 HP @ 50 cum/hr.	hour	6.000	3247.00	19482.00	P&M-032
Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
or					
Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Tipper 10 tonne capacity	tonne. km	720 x L	18.00	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	724.00	8688.00	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	71.00	5112.00	M-189
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d) GST (multiplying factor 0.2016) on (a+b+c)	19490.72
e) Overhead charges @ 10 % on (a+b+c+d)	11617.09
f) Contractor's profit @ 10 % on (a+b+c+d+e)	12778.80
g) Cess @ 1% on (a+b+c+d+e+f)	1405.67
Cost for 360 cum = a+b+c+d+e+f+g	141972.44
Rate per cum = (a+b+c+d+e+f+g)/360	394.37

say 394.00

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.

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

Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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4.11 405.2 Penetration Coat Over Top Layer of Crushed Cement Concrete Base

Spraying of bitumen over cleaned dry surface of crushed cement concrete base at the rate of 25 kg per 10 sqm by a bitumen pressure distributor, spreading of key aggregates at the rate of 0.13 cum per 10 sqm by a mechanical gritter and rolling the surface as per clause 506.3.8

Unit = sqm

Taking output = 7500 sqm

a) Labour

Mate	day	0.560	551.00	308.56	L-12
Mazdoor skilled	day	2.000	508.00	1016.00	L-15
Mazdoor	day	12.000	424.00	5088.00	L-13

b) Machinery

Mechanical broom hydraulic @ 1250 sqm per hour	hour	6.000	473.00	2838.00	P&M-031
Hydraulic self propelled chips spreader	hour	6.000	3640.00	21840.00	P&M-025
Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Tipper 10 tonne capacity	hour	6.000	916.00	5496.00	P&M-048
Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	969.00	3779.10	P&M-059
Bitumen pressure distributor @ 1750 sqm per hour	hour	4.280	1509.00	6458.52	P&M-004

c) Material

Crushed stone aggregate 11.2 mm size	cum	97.500	1800.00	175500.00	M-051
Bitumen (80-100 grade)	tonne	0.250	57924.00	14481.00	M-074

d) GST (multiplying factor 0.2016) on (a+b+c)

49963.17

e) Overhead charges @ 10 % on (a+b+c+d)

29779.64

f) Contractor's profit @ 10 % on (a+b+c+d+e)

32757.60

g) Cess @ 1% on (a+b+c+d+e+f)

3603.34

Cost for 7500 sqm = a+b+c+d+e+f+g

363936.93

Rate per sqm = (a+b+c+d+e+f+g)/7500

48.52

say 49.00

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	551.00	264.48	L-12
Mazdoor skilled	day	2.000	508.00	1016.00	L-15
Mazdoor	day	10.000	424.00	4240.00	L-13

b) Machinery

Wet mix plant of 75 tonne hourly capacity	hour	9.000	1794.00	16146.00	P&M-094
Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
Front end loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
Paver finisher	hour	6.000	1386.00	8316.00	P&M-035
Three wheel 80-100 kN Static Roller	hour	6x0.65	969.00	3779.10	P&M-059

or

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Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000			
		Water tanker 6 KL capacity	hour	3.000	724.00	2172.00	P&M-060
		Tipper	tonne. km	495 x L	18.00	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 (Table 400-11)					
		45 mm to 22.4 mm@ 30 per cent	cum	89.100	1010.00	89991.00	M-034
		22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	1020.00	121176.00	M-031
		2.36 mm to 75 micron@ 30 per cent	cum	89.100	700.00	62370.00	M-022
		Cost of water	KL	18.000	71.00	1278.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				66243.05	
		e) Overhead charges @ 10 % on (a+b+c+d)				39482.96	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				43431.26	
		g) Cess @ 1% on (a+b+c+d+e+f)				4777.44	
		Cost for 225 cum = a+b+c+d+e+f+g				482521.29	
		Rate per cum = (a+b+c+d+e+f+g)/225				2144.54	
					say	<u>2145.00</u>	
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	551.00	132.24	L-12
		Mazdoor	day	6.000	424.00	2544.00	L-13
		b) Machinery					
		Water tanker 6 KL with 5 km lead and 1 trip per hour	hour	1.000	724.00	724.00	P&M-060
		Plate compactor @ 3.5 cum per hour	hour	6.000	382.00	2292.00	P&M-086
		c) Material					
		Cost of water	KL	6.000	71.00	426.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				1233.44	
		e) Overhead charges @ 10 % on (a+b+c+d)				735.17	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				808.69	
		g) Cess @ 1% on (a+b+c+d+e+f)				88.96	
		Cost for 21 cum = a+b+c+d+e+f+g				8984.50	
		Rate per cum = (a+b+c+d+e+f+g)/21				427.83	
					say	<u>428.00</u>	

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Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		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 Unit = cum Taking output = 21 cum					
		a) Labour					
		Mate	day	0.160	551.00	88.16	L-12
		Mazdoor	day	4.000	424.00	1696.00	L-13
		b) Machinery					
		Water tanker with 5 km lead	hour	1.000	724.00	724.00	P&M-060
		Plate Compactor @ 3.5 cum per hour	hour	6.000	382.00	2292.00	P&M-086
		Hydraulic Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.500	2044.00	1022.00	P&M-026
		Tipper 10 tonne capacity	tonne. km	52.5 x L	18.00	2835.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of transportation to cover cost of loading and unloading				283.50	
		c) Material					
		Cost of water	KL	6.000	71.00	426.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				1888.32	
		e) Overhead charges @ 10 % on (a+b+c+d)				1125.50	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1238.05	
		g) Cess @ 1% on (a+b+c+d+e+f)				136.19	
		Cost for 21 cum = a+b+c+d+e+f+g				13754.72	
		Rate per cum = (a+b+c+d+e+f+g)/ 21				654.99	
					say	655.00	
		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					

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

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

Taking output = 360 cum

A By Mix in Place Method

a) Labour

Mate	day	0.480	551.00	264.48	L-12
Mazdoor skilled	day	2.000	508.00	1016.00	L-15
Mazdoor	day	10.000	424.00	4240.00	L-13

b) Machinery

Tractor attached with rotavator @ 25 cum per hour	hour	12.000	494.00	5928.00	P&M-054
Motor grader 110 HP	hour	6.000	3247.00	19482.00	P&M-032
Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
Water tanker 6 KL capacity	hour	6.000	724.00	4344.00	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	980.00	154310.80	M-038
22.5 mm to 5.6 mm @ 32 per cent	cum	151.060	1590.00	240185.40	M-032
Below 5.6 mm @ 35 per cent	cum	166.680	1300.00	216684.00	M-030
Cost of water	KL	36.000	71.00	2556.00	M-189

Or

ii) For 45 mm maximum size

45 mm to 22.5 mm @ 5 per cent	cum	24.120	1010.00	24361.20	M-034
22.4 mm to 5.6 mm @ 50 per cent	cum	237.600	1590.00	377784.00	M-032
Below 5.6 mm @ 45 per cent	cum	213.480	1300.00	277524.00	M-030
Cost of water	KL	36.000	71.00	2556.00	M-189

4.17A (i) For 53 mm maximum size

d) GST (multiplying factor 0.2016) on (a+b+c)	132012.66
e) Overhead charges @ 10 % on (a+b+c+d)	78683.73
f) Contractor's profit @ 10 % on (a+b+c+d+e)	86552.11
g) Cess @ 1% on (a+b+c+d+e+f)	9520.73
Cost for 360.0cum = a+b+c+d+e+f+g	961593.91
Rate per cum = (a+b+c+d+e+f+g)/360	2671.09
or	
	say 2671.00

4.17A (ii) For 45 mm maximum size

d) GST (multiplying factor 0.2016) on (a+b+c)	145820.04
e) Overhead charges @ 10 % on (a+b+c+d)	86913.37
f) Contractor's profit @ 10 % on (a+b+c+d+e)	95604.71
g) Cess @ 1% on (a+b+c+d+e+f)	10516.52
Cost for 360.0cum = a+b+c+d+e+f+g	1062168.32
Rate per cum = (a+b+c+d+e+f+g)/360	2950.47
	say 2950.00

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	551.00	154.28	L-12
Mazdoor skilled	day	1.000	508.00	508.00	L-15

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

Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Mazdoor	day	6.000	424.00	2544.00	L-13
		b) Machinery					
		Wet mix plant @ 75 tonne per hour	hour	6.000	1794.00	10764.00	P&M-094
		Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Motor grader 110 HP	hour	6.000	3247.00	19482.00	P&M-032
		Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
		Water tanker 6 KL capacity	hour	3.000	724.00	2172.00	P&M-060
		Tipper 10 tonne capacity	tonne.km	450 x L	18.00	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	980.00	96432.00	M-038
		22.5 mm to 5.6 mm@ 32 per cent	cum	94.410	1590.00	150111.90	M-032
		Below 5.6 mm @ 35 per cent	cum	104.180	1300.00	135434.00	M-030
		Or					
		ii) For 45 mm maximum size					
		45 mm to 22.5 mm@ 5 per cent	cum	15.060	1010.00	15210.60	M-034
		22.4 mm to 5.6 mm@ 50 per cent	cum	148.500	1590.00	236115.00	M-032
		Below 5.6 mm@ 45 per cent	cum	133.430	1300.00	173459.00	M-030
		Cost of water	KL	18.000	71.00	1278.00	M-189
4.17 B		(i) For 53 mm maximum size					
		d) GST (multiplying factor 0.2016) on (a+b+c)				88956.84	
		e) Overhead charges @ 10 % on (a+b+c+d)				53021.10	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				58323.21	
		g) Cess @ 1% on (a+b+c+d+e+f)				6415.55	
		Cost for 225cum = a+b+c+d+e+f+g				647970.88	
		Rate per cum = (a+b+c+d+e+f+g)/225				2879.87	
					say	2880.00	
4.17 B		(ii) For 45 mm maximum size					
		d) GST (multiplying factor 0.2016) on (a+b+c)				97844.32	
		e) Overhead charges @ 10 % on (a+b+c+d)				58318.32	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				64150.15	
		g) Cess @ 1% on (a+b+c+d+e+f)				7056.52	
		Cost for 360.0cum = a+b+c+d+e+f+g				712708.19	
		Rate per cum = (a+b+c+d+e+f+g)/360				1979.74	
					say	1980.00	
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	551.00	991.80	L-12
		Mazdoor	day	18.000	424.00	7632.00	L-13

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

Sl. No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Mazdoor for consolidation of sub-	day	0.270	424.00	114.48	L-13
		Mazdoor for watch & ward	day	0.054	424.00	22.90	L-13
		b) Machinery					
		Three wheel 80-100 kN Static Roller	hour	0.430	969.00	416.67	M-189
		c) GST (multiplying factor 0.2016) on (a+b)				1850.25	
		d) Overhead charges @ 10 % on (a+b+c)				1102.81	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1213.09	
		f) Cess @ 1% on (a+b+c+d+e)				133.44	
		Cost for 100 Sq.m. = a+b+c+d+e+f				13477.44	
		Rate per Sq.m. = (a+b+c+d+e+f)/ 100				134.77	
					say	<u>135.00</u>	

- (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	424.00	22.90	L-13
b) Machinery							
		Three wheel 80-100 kN Static Roller	hour	0.430	969.00	416.67	M-189
c) GST (multiplying factor 0.2016) on (a+b)						88.62	
d) Overhead charges @ 10 % on (a+b+c)						52.82	
e) Contractor's profit @ 10 % on (a+b+c+d)						58.10	
f) Cess @ 1% on (a+b+c+d+e)						6.39	
		Cost for 100 Sq.m. = a+b+c+d+e+f				645.50	
		Rate per Sq.m. = (a+b+c+d+e+f)/ 100				6.46	
					say	<u>6.46</u>	

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 gumboots, hand gloves, dark goggles, barnol, country soap, coconut oil, tarring outfits, etc. For this purpose, additional 0.5 per cent sundries have been provided in the analysis of rates in addition to the normal sundries covered by overheads.
- 9 Where the proposed aggregates fail to pass the stripping value test, an approved adhesion agent shall be added to the binder as per Clause 507.2.4 with the approval of the Engineer and cost of the adhesion agent shall be added under the subhead of materials.
- 10 The Factor for usage of rollers has been taken as 0.65 in case of Bituminous Macadam only.

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

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. <i>Unit = sqm</i> <i>Taking output = 3500 sqm</i>					
		a) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	2.800	473.00	1324.40	P&M-031
		Air compressor 250 cfm	hour	2.800	658.00	1842.40	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	2.000	1509.00	3018.00	P&M-004
		Water tanker 6 KL capacity @ 1 trip per hour	hour	1.000	724.00	724.00	P&M-060
		c) Material					
		Bitumen emulsion @ 0.6 kg per sqm	tonne	2.100	55000.00	115500.00	M-077
		Cost of water	KL	6.000	71.00	426.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				24943.34	
		e) Overhead charges @ 10 % on (a+b+c+d)				14867.02	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				16353.72	
		g) Cess @ 1% on (a+b+c+d+e+f)				1798.91	
		Cost for 3500 sqm = a+b+c+d+e+f+g				181689.87	
		Rate per sqm = (a+b+c+d+e+f+g)/3500				51.91	
					say	52.00	
		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. <i>Unit = sqm</i> <i>Taking output = 3500 sqm</i>					
		a) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	2.800	473.00	1324.40	P&M-031
		Air compressor 250 cfm	hour	2.800	658.00	1842.40	P&M-001
		Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	1509.00	3018.00	P&M-004
		c) Material					
		Bitumen emulsion @ 0.2 kg per sqm	tonne	0.700	55000.00	38500.00	M-077
		d) GST (multiplying factor 0.2016) on (a+b+c)				9188.30	
		e) Overhead charges @ 10 % on (a+b+c+d)				5476.52	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				6024.17	
		g) Cess @ 1% on (a+b+c+d+e+f)				662.66	
		Cost for 3500 sqm = a+b+c+d+e+f+g				66928.53	
		Rate per sqm = (a+b+c+d+e+f+g)/3500				19.12	
					say	19.00	

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
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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	551.00	462.84	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	424.00	6784.00	L-13
Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15

b) Machinery

Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	32730.00	196380.00	P&M-021
Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	473.00	1040.60	P&M-031
Air compressor 250 cfm	hour	2.200	658.00	1447.60	P&M-001
Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
Generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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*	783.00	3053.70	P&M-044
Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	969.00	3779.10	P&M-059
Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1641.00	6399.90	P&M-045

c) Material

i) Bitumen@ 3.3 per cent of mix	tonne	14.850	57924.00	860171.40	M-074
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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

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

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	1910.00	83104.10	M-049
		25 - 10 mm 45 per cent	cum	130.550	1860.00	242823.00	M-046
		10 - 5 mm 25 per cent	cum	72.530	1550.00	112421.50	M-040
		5 mm and below 15 per cent	cum	43.510	1300.00	56563.00	M-030
		or					
		Grading II (19 mm nominal size)					
		25 - 10 mm 40 per cent	cum	116.040	1860.00	215834.40	M-046
		10 - 5 mm 40 per cent	cum	116.040	1550.00	179862.00	M-040
		5 mm and below 20 per cent	cum	58.020	1300.00	75426.00	M-030
		* Any one of the alternative may be adopted as per approved design					
		(i) for Grading I (40 mm nominal size)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				326189.76	
		e) Overhead charges @ 10 % on (a+b+c+d)				194419.45	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				213861.40	
		g) Cess @ 1% on (a+b+c+d+e+f)				23524.75	
		Cost for 205 cum = a+b+c+d+e+f+g				2376000.10	
		Rate per cum = (a+b+c+d+e+f+g)/205 (For Grading I)				11590.24	
					say	<u>11590.00</u>	
		(ii) for Grading II (19 mm nominal size)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				321393.85	
		e) Overhead charges @ 10 % on (a+b+c+d)				191560.94	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				210717.03	
		g) Cess @ 1% on (a+b+c+d+e+f)				23178.87	
		Cost for 205 cum = a+b+c+d+e+f+g				2341066.23	
		Rate per cum = (a+b+c+d+e+f+g)/205 (For Grading-II)				11419.84	
					say	<u>11420.00</u>	
		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	551.00	176.32	L-12

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Mazdoor including for brooming of key aggregates	day	6.000	424.00	2544.00	L-13
		Mazdoor skilled	day	2.000	508.00	1016.00	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	3640.00	21840.00	P&M-025
		Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.570	1509.00	3878.13	P&M-004
		Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	916.00	9160.00	P&M-048
		Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		c) Material					
		Bitumen@ 5 kg per sqm	tonne	22.500	57924.00	1303290.00	M-074
		Crushed stone coarse aggregate passing 45 mm and retained on 2.8 mm sieve @ 0.06 cum per sqm	cum	270.000	790.00	213300.00	M-033
		Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.015 cum per sqm	cum	67.500	1020.00	68850.00	M-031
		d) GST (multiplying factor 0.2016) on (a+b+c)				330804.72	
		e) Overhead charges @ 10 % on (a+b+c+d)				197170.12	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				216887.13	
		g) Cess @ 1% on (a+b+c+d+e+f)				23857.58	
		Cost for 4500 sqm = a+b+c+d+e+f+g				2409616.00	
		Rate per sqm = (a+b+c+d+e+f+g)/4500				535.47	
					say	535.00	

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 0.400 551.00 220.40 L-12

Mazdoor including for brooming of key aggregates day 8.000 424.00 3392.00 L-13

Mazdoor skilled day 2.000 508.00 1016.00 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 3640.00 21840.00 P&M-025

Bitumen pressure distributor for@ 1750 sqm per hour hour 2.570 1509.00 3878.13 P&M-004

Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader hour 10.000 916.00 9160.00 P&M-048

Three wheel 80-100 kN Static Roller hour 6.000 969.00 5814.00 P&M-059

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		c) Material					
		Bitumen@ 6.8 kg per sqm	tonne	30.600	57924.00	1772474.40	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	820.00	332100.00	M-037
		Key aggregates passing 26.5 mm and retained on 2.8 mm sieve @ 0.018 cum per sqm	cum	81.000	850.00	68850.00	M-026
		d) GST (multiplying factor 0.2016) on (a+b+c)				449522.22	
		e) Overhead charges @ 10 % on (a+b+c+d)				267929.52	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				294722.47	
		g) Cess @ 1% on (a+b+c+d+e+f)				32419.47	
		Cost for 4500 sqm = a+b+c+d+e+f+g				3274366.61	
		Rate per sqm = (a+b+c+d+e+f+g)/4500				727.64	
					say	<u>728.00</u>	

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	551.00	220.40	L-12
	Mazdoor including for brooming of key aggregates	day	8.000	424.00	3392.00	L-13
	Mazdoor skilled	day	2.000	508.00	1016.00	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	3640.00	21840.00	P&M-025
	Bitumen pressure distributor for 3000 x 2 sqm @ 1750 sqm per hour	hour	3.430	1509.00	5175.87	P&M-004
	Tipper 5.5 cum capacity	hour	10.000	916.00	9160.00	P&M-048
	Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
	Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
c)	Material					
	Bitumen30 kg per 10 sqm @ 15 kg per 10 sqm for each layer	tonne	9.000	57924.00	521316.00	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	850.00	255000.00	M-035
	Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.000	1020.00	39780.00	M-031

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Sl. No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		d) GST (multiplying factor 0.2016) on (a+b+c)				176146.44	
		e) Overhead charges @ 10 % on (a+b+c+d)				104988.87	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				115487.76	
		g) Cess @ 1% on (a+b+c+d+e+f)				12703.65	
		Cost for 3000 sqm = a+b+c+d+e+f+g				1283068.99	
		Rate per sqm = (a+b+c+d+e+f+g)/3000				427.69	
					say	428.00	

Note 2 tippers will be needed to match the capacity of hydraulic chip spreader and front end loader.

5.6 507 Dense 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	551.00	462.84	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	424.00	6784.00	L-13
Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15

b) Machinery

Batch mix HMP @ 75 tonne per hour	hour	6.000	20099.00	120594.00	P&M-022
Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
Generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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*	783.00	3053.70	P&M-044
Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	969.00	3779.10	P&M-059
Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1641.00	6399.90	P&M-045

c) Materials

Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	57924.00	1108086.12	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

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BASES AND SURFACE COURSES (BITUMINOUS)

SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
Grading - I40 mm (Nominal Size)							
		37.5 - 25 mm 22 per cent	cum	63.190	1910.00	120692.90	M-049
		25 - 10 mm 13 per cent	cum	37.340	1860.00	69452.40	M-046
		10 -4.75 mm 19 per cent	cum	54.580	1550.00	84599.00	M-040
		4.75 mm and below 44 per cent	cum	126.390	1300.00	164307.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	15000.00	129300.00	M-188
or							
Grading - II19 mm (Nominal Size)							
		25 - 10 mm 30 per cent	cum	86.160	1860.00	160257.60	M-046
		10 - 5 mm 28 per cent	cum	80.430	1550.00	124666.50	M-040
		5 mm and below 40 per cent	cum	114.900	1300.00	149370.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	15000.00	129300.00	M-188
* Any one of the alternative may be adopted as per approved design							
(i) For Grading-I (40 mm nominal size)							
d) GST (multiplying factor 0.2016) on (a+b+c)						375194.73	
e) Overhead charges @ 10 % on (a+b+c+d)						223627.97	
f) Contractor's profit @ 10 % on (a+b+c+d+e)						245990.77	
g) Cess @ 1% on (a+b+c+d+e+f)						27058.98	
Cost for 205 cum = a+b+c+d+e+f+g						2732957.41	
Rate per cum = (a+b+c+d+e+f+g)/195 (For Grading I)						14015.17	
						say	<u>14015.00</u>
(ii) For Grading-II (19 mm nominal size)							
d) GST (multiplying factor 0.2016) on (a+b+c)						374235.68	
e) Overhead charges @ 10 % on (a+b+c+d)						223056.34	
f) Contractor's profit @ 10 % on (a+b+c+d+e)						245361.98	
g) Cess @ 1% on (a+b+c+d+e+f)						26989.82	
Cost for 205 cum = a+b+c+d+e+f+g						2725971.58	
Rate per cum = (a+b+c+d+e+f+g)/195 (For Grading-II)						13979.34	
						say	<u>13979.00</u>
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.							

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BASES AND SURFACE COURSES (BITUMINOUS)

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 <i>Unit = cum</i> <i>Taking output = 195 cum (450 tonnes)</i>					
		a) Labour					
		Mate	day	0.840	551.00	462.84	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	424.00	6784.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour	hour	6.000	20099.00	120594.00	P&M-022
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
		Generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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*	783.00	3053.70	P&M-044
		Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	969.00	3779.10	P&M-059
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1641.00	6399.90	P&M-045
		c) Material					
		* Grading I: 13 mm (Nominal Size)					
		i) Bitumen@ 4.5 per cent of weight of mix	tonne	20.250	57924.00	1172961.00	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	1580.00	90534.00	M-044
		10 - 5 mm 38 per cent	cum	108.870	1550.00	168748.50	M-040
		5 mm and below 40 per cent	cum	114.600	1300.00	148980.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	15000.00	129300.00	M-188

or

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Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
Grading II: 10 mm (Nominal Size)							
		Bitumen@5 per cent of weight of mix	tonne	22.500	57924.00	1303290.00	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	1550.00	251797.50	M-040
		4.75 and below@ 41 per cent	cum	116.850	1300.00	151905.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	15000.00	129300.00	M-188
		*Any one of the alternative may be adopted as per approved design					
		(i) for Grading -I (13 mm nominal size)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				382066.48	
		e) Overhead charges @ 10 % on (a+b+c+d)				227723.75	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				250496.13	
		g) Cess @ 1% on (a+b+c+d+e+f)				27549.95	
		Cost for 205 cum = a+b+c+d+e+f+g				2783007.35	
		Rate per cum = (a+b+c+d+e+f+g)/195 (For Grading I)				14271.83	
					say	<u>14272.00</u>	
5.7		(ii) for Grading-II(10 mm nominal size)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				407421.51	
		e) Overhead charges @ 10 % on (a+b+c+d)				242836.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				267119.77	
		g) Cess @ 1% on (a+b+c+d+e+f)				29383.17	
		Cost for 205 cum = a+b+c+d+e				2967700.65	
		Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				15218.98	
					say	<u>15219.00</u>	
		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					

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Sl. No	Ref. to MORTH/DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
			Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects					
			Unit = cum					
			Taking output = 191 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	551.00	462.84	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	424.00	6784.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	20099.00	120594.00	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
			Generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
			Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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*	783.00	3053.70	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	969.00	3779.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1641.00	6399.90	P&M-045
			c) Material					
			i) Bitumen@ 5 per cent of weight of mix	tonne	22.500	57924.00	1303290.00	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	1850.00	184537.50	M-045
			10 - 5 mm 23 per cent	cum	65.550	1550.00	101602.50	M-040
			5 mm and below 40 per cent	cum	114.000	1300.00	148200.00	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	15000.00	129300.00	M-188
			or					
			Grading - II-13 mm (Nominal Size)					
			13.2 - 10 mm30 per cent	cum	85.500	1580.00	135090.00	M-044

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Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		10 - 5 mm 25 per cent	cum	71.250	1550.00	110437.50	M-040
		5 mm and below 43 per cent	cum	122.550	1300.00	159315.00	M-030
		Filler @ 2 per cent of weight of aggregates.	tonne	8.620	15000.00	129300.00	M-188

***Any one of the alternative may be adopted as per approved design**

5.8	(i)	for Grading-I (13 mm nominal size)		
	d)	GST (multiplying factor 0.2016) on (a+b+c)	413598.03	
	e)	Overhead charges @ 10 % on (a+b+c+d)	246517.56	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)	271169.31	
	g)	Cess @ 1% on (a+b+c+d+e+f)	29828.62	
	Cost for 205 cum = a+b+c+d+e+f+g		3012691.06	
	Rate per cum = (a+b+c+d+e+f+g)/191 (For Grading I)		15773.25	
			say	<u>15773.00</u>
	(ii)	for Grading-II(10 mm nominal size)		
	d)	GST (multiplying factor 0.2016) on (a+b+c)	407651.34	
e)	Overhead charges @ 10 % on (a+b+c+d)	242973.14		
f)	Contractor's profit @ 10 % on (a+b+c+d+e)	267270.45		
g)	Cess @ 1% on (a+b+c+d+e+f)	28044.22		
Cost for 205 cum = a+b+c+d+e+f+g		2968019.19		
Rate per cum = (a+b+c+d+e+f+g)/191 (For Grading-II)		15539.37		
		say	<u>15539.00</u>	

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 :-19 mm nominal chipping size

-1

a) Labour

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SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Mate	day	0.440	551.00	242.44	L-12
		Mazdoor	day	9.000	424.00	3816.00	L-13
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	7.200	473.00	3405.60	P&M-031
		Air compressor 250 cfm	hour	7.200	658.00	4737.60	P&M-001
		Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3640.00	21840.00	P&M-025
		Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	916.00	5496.00	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Bitumen pressure distributor	hour	6.000	1509.00	9054.00	P&M-004
		Smooth wheeled roller 8-10 tonne weight	hour	6.000	783.00	4698.00	P&M-044
		c) Material					
		Bitumen@ 1.20 kg per sqm	tonne	10.800	57924.00	625579.20	M-074
		Crushed stone chipping, 19 mm nominal size @ 0.015 cum per sqm	cum	135.000	1900.00	256500.00	M-053
		d) GST (multiplying factor 0.2016) on (a+b+c)				190998.43	
		e) Overhead charges @ 10 % on (a+b+c+d)				113841.13	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				125225.24	
		g) Cess @ 1% on (a+b+c+d+e+f)				13772.35	
		Cost for 9000 sqm = a+b+c+d+e+f+g				1391249.99	
		Rate per sqm = (a+b+c+d+e+f+g)/9000				154.58	
					say	155.00	

5.9 Case 13 mm nominal size chipping - II

a) Labour					
Mate	day	0.440	551.00	242.44	L-12
Mazdoor	day	9.000	424.00	3816.00	L-13
Mazdoor skilled	day	2.000	508.00	1016.00	L-15
b) Machinery					
Mechanical broom @ 1250 sqm per hour	hour	7.200	473.00	3405.60	P&M-031
Air compressor 250 cfm	hour	7.200	658.00	4737.60	P&M-001
Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3640.00	21840.00	P&M-025
Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	916.00	5496.00	P&M-048
Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1509.00	9054.00	P&M-004
Three wheel 80-100 kN Static Roller	hour	6.000	969.00	5814.00	P&M-059
c) Material					
Bitumen@ 1.00 kg per sqm	tonne	9.000	57924.00	521316.00	M-074
Crushed stone chipping, 13 mm nominal size @ 0.01 cum per sqm	cum	90.000	1820.00	163800.00	M-052
d) GST (multiplying factor 0.2016) on (a+b+c)				151515.63	
e) Overhead charges @ 10 % on (a+b+c+d)				90308.13	

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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)				99338.94	
		g) Cess @ 1% on (a+b+c+d+e+f)				10927.28	
		Cost for 9000 sqm = a+b+c+d+e+f+g				1103655.62	
		Rate per sqm = (a+b+c+d+e+f+g)/9000				122.63	
					say	<u>123.00</u>	
		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 1st 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	551.00	462.84	L-12
		Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	424.00	6784.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15
		b) Machinery					
		i) Batch type HMP 75 tonne per hour	hour	6.000	20099.00	120594.00	P&M-023
		ii) Electric Generator Set 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
		iii) Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		iv) Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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	3847.00	23082.00	P&M-034
		iv) Smooth wheeled /tandem roller 8-10 tonnes weight	hour	6.000	1641.00	9846.00	P&M-045
		c) Material					
		Bitumen@ 14.60 kg per 10 sqm	tonne	14.970	57924.00	867122.28	M-074
		Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	276.750	1600.00	442800.00	M-043
		d) GST (multiplying factor 0.2016) on (a+b+c)				300622.52	
		e) Overhead charges @ 10 % on (a+b+c+d)				179180.56	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				197098.62	
		g) Cess @ 1% on (a+b+c+d+e+f)				21680.85	
		Cost for 10250 sqm = a+b+c+d+e				2189765.67	
		Rate per sqm = (a+b+c+d+e)/10250				213.64	
					say	<u>214.00</u>	

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BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
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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	551.00	440.80	L-12
Mazdoor	day	18.000	424.00	7632.00	L-13
Mazdoor skilled	day	2.000	508.00	1016.00	L-15

b) Machinery

Concrete mixer 0.4/0.28 cum capacity	hour	6.000	291.00	1746.00	P&M-009
Smooth wheeled steel roller 8-10 tonne	hour	6.000	783.00	4698.00	P&M-044

c) Material

Cationic Bitumen Emulsion @ 21.50 kg per 10 sqm	tonne	1.940	55000.00	106700.00	M-073
Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	1600.00	38880.00	M-043

d) GST (multiplying factor 0.2016) on (a+b+c) 32480.34

e) Overhead charges @ 10 % on (a+b+c+d) 19359.31

f) Contractor's profit @ 10 % on (a+b+c+d+e) 21295.25

g) Cess @ 1% on (a+b+c+d+e+f) 2342.48

Cost for 900 sqm = a+b+c+d+e+f+g 236590.18

Rate per sqm = (a+b+c+d+e+f+g)/900 262.88

say 263.00

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	551.00	462.84	L-12
Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	424.00	6784.00	L-13
Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15

b) Machinery

i) HMP of appropriate capacity.	hour	6.000	32730.00	196380.00	P&M-021
ii) Electric Generator Set 250 KVA	hour	6.000	1154.00	6924.00	P&M-081

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SI. 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	1838.00	11028.00	P&M-017
		iv) Tipper 10 tonne capacity	tonne.km	450 x L	18.00	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	3847.00	23082.00	P&M-034
		iv) Smooth wheeled 8-10 tonnes weight	hour	6.000	783.00	4698.00	P&M-044
		c) Material					
		Type - A					
		* Bitumen@ 22 kg per 10 sqm	tonne	22.500	57924.00	1303290.00	M-074
		Stone crushed aggregates 11.2 mm to 0.09 @ 0.27 cum per 10 sqm	cum	276.750	1500.00	415125.00	M-041
		or					
		Type - B					
		Bitumen @ 19 kg per 10 sqm	tonne	19.480	57924.00	1128359.52	M-074
		Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	276.750	1200.00	332100.00	M-042
		d) GST (multiplying factor 0.2016) on (a+b+c)				397215.27	
		e) Overhead charges @ 10 % on (a+b+c+d)				236752.91	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				260428.20	
		g) Cess @ 1% on (a+b+c+d+e+f)				28642.47	
		Cost for 10250 sqm = a+b+c+d+e+f+g				2893352.69	
		Rate per sqm =(a+b+c+d+e+f+g)/10250				282.28	
					say	<u>282.00</u>	
		* 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	551.00	132.24	L-12
		Mazdoor	day	6.000	424.00	2544.00	L-13
		b) Machinery					
		Hydraulic self propelled chip spreader	hour	6.000	3640.00	21840.00	P&M-025
		Tipper 5.5 cum capacity	hour	6.000	916.00	5496.00	P&M-048
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1509.00	9054.00	P&M-004
		Smooth wheeled roller 8 -10 tonne weight	hour	6.000	783.00	4698.00	P&M-044
		c) Material					
		Bitumen@ 9.80 kg per 10 sqm	tonne	10.050	57924.00	582136.20	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	1300.00	119925.00	M-050

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BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		d) GST (multiplying factor 0.2016) on (a+b+c)				152581.65	
		e) Overhead charges @ 10 % on (a+b+c+d)				90943.51	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				100037.86	
		g) Cess @ 1% on (a+b+c+d+e+f)				11004.16	
		Cost for 10250 sqm = a+b+c+d+e+f+g				1111420.62	
		Rate per sqm = (a+b+c+d+e+f+g)/10250				108.43	
					say	<u>108.00</u>	

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	551.00	88.16	L-12		
Mazdoor	day	4.000	424.00	1696.00	L-13		
b) Machinery							
HMP of 75 tonnes/hour.	hour	2.000	20099.00	40198.00	P&M-023		
Electric Generator Set 250 KVA	hour	2.000	1154.00	2308.00	P&M-081		
Front end loader 1 cum bucket capacity	hour	2.000	1838.00	3676.00	P&M-017		
Tipper 10 tonne capacity	tonne. km	104 x 'L'	18.00	0.00	Lead =0 km & P&M-058		
						0.00	
Add 10 per cent of cost of carriage to cover cost of loading and unloading							
Paver finisher hydrostatic with sensor attachment	hour	2.000	3847.00	7694.00	P&M-034		
Smooth wheeled 8-10 tonnes capacity	hour	2.000	783.00	1566.00	P&M-044		
c) Material							
Bitumen@ 6.80 kg per 10 sqm	tonne	5.340	57924.00	309314.16	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	1300.00	61308.00	M-050		
d) GST (multiplying factor 0.2016) on (a+b+c)				86254.22			
e) Overhead charges @ 10 % on (a+b+c+d)				51410.25			
f) Contractor's profit @ 10 % on (a+b+c+d+e)				56551.28			
g) Cess @ 1% on (a+b+c+d+e+f)				6220.64			
Cost for 7858 sqm = a+b+c+d+e+f+g				628284.71			
Rate per sqm = (a+b+c+d+e+f+g)/7858				79.95			
				say		<u>80.00</u>	

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.

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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.					
			<i>Unit = sqm</i>					
			<i>Taking output = 35.00 sqm (0.87 cum) assuming a density of 2.3 tonnes/cum.-2 tonnes</i>					
			a) Labour					
			Mate	day	0.440	551.00	242.44	L-12
			Mazdoor	day	10.000	424.00	4240.00	L-13
			Mazdoor skilled	day	1.000	508.00	508.00	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	0.060	473.00	28.38	P&M-031
			Air compressor 250 cfm	hour	0.060	658.00	39.48	P&M-001
			Mastic cooker 1 tonne capacity	hour	6.000	135.00	810.00	P&M-030
			Bitumen boiler 1500 litres	hour	6.000	348.00	2088.00	P&M-005
			Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	530.00	530.00	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	57924.00	11584.80	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	700.00	273.00	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	15000.00	5400.00	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	1600.00	880.00	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	2107.00	42.14	M-142

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BASES AND SURFACE COURSES (BITUMINOUS)

SI. 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 = $0.018 \times 1.456 \times 2/100 = 0.0005$ MT = 0.5kg	kg	0.500	58.00	29.00	M-074
		d) GST (multiplying factor 0.2016) on (a+b+c)				5381.76	
		e) Overhead charges @ 10 % on (a+b+c+d)				3207.70	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				3528.47	
		g) Cess @ 1% on (a+b+c+d+e+f)				388.13	
		Cost for 35.00 sqm = a+b+c+d+e+f+g				39201.30	
		Rate per sqm = (a+b+c+d+e+f+g)/35				1120.04	
					say	1120.00	
5.15	516	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.					
		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	551.00	132.24	L-12
		Mazdoor	day	6.000	424.00	2544.00	L-13
		b) Machinery					
		Mechanical broom	hour	6.000	473.00	2838.00	P&M-031
		Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1328.00	7968.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	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	916.00	5496.00	P&M-048
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1708.00	10248.00	P&M-037
		Water tanker 6 KL capacity	hour	2.000	724.00	1448.00	P&M-060
		c) Material					
		Residual Binder @ 11 per cent of mix 80 x 2.2 x 0.11	tonne	19.360	55000.00	1064800.00	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 density 1.5, = $153.12/1.5 = 102.08$ cum	cum	102.080	1300.00	132704.00	M-030
		Filler @ 2 per cent of total mix = 80 x 2.2 x 0.02	tonne	3.520	15000.00	52800.00	M-188

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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	71.00	852.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				261436.14	
		e) Overhead charges @ 10 % on (a+b+c+d)				155824.24	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				171406.66	
		g) Cess @ 1% on (a+b+c+d+e+f)				18854.73	
		Cost for 16000 sqm = a+b+c+d+e				1904328.01	
		Rate per sqm = (a+b+c+d+e)/16000				119.02	
					say	<u>119.00</u>	
5.15	(ii)	3 mm thickness					
		Unit = sqm					
		Taking output = 20000 sqm (60 cum)					
	a)	Labour					
		Mate	day	0.200	551.00	110.20	L-12
		Mazdoor	day	5.000	424.00	2120.00	L-13
	b)	Machinery					
		Mechanical broom	hour	6.000	473.00	2838.00	P&M-031
		Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1328.00	7968.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	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	916.00	5496.00	P&M-048
		Water tanker 6 KL capacity	hour	2.000	724.00	1448.00	P&M-060
	c)	Material					
		Residual Binder @ 13 per cent of mix = 60 x 2.2 x 0.13	tonne	17.160	55000.00	943800.00	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	700.00	52360.00	M-022
		Filler @ 2 per cent of total mix = 60x 2.2 x 0.02	tonne	2.640	15000.00	39600.00	M-188
		Cost of water	KL	12.000	71.00	852.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				216028.15	
		e) Overhead charges @ 10 % on (a+b+c+d)				128759.64	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				141635.60	
		g) Cess @ 1% on (a+b+c+d+e+f)				15579.92	
		Cost for 30000 sqm = a+b+c+d+e+f+g				1573571.51	
		Rate per sqm = (a+b+c+d+e+f+g)/20000				78.68	
					say	<u>79.00</u>	
5.15	(iii)	1.5 mm thickness					
		Unit = sqm					
		Taking output = 24000 sqm (36 cum)					
	a)	Labour					
		Mate	day	0.200	551.00	110.20	L-12
		Mazdoor	day	5.000	424.00	2120.00	L-13
	b)	Machinery					
		Mechanical broom	hour	6.000	473.00	2838.00	P&M-031
		Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
		Mobile slurry seal equipment	hour	6.000	1328.00	7968.00	P&M-033
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017

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SI. 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	916.00	5496.00	P&M-048
		Water tanker 6 KL capacity	hour	2.000	724.00	1448.00	P&M-060
		c) Material					
		Residual Binder @ 16 per cent of mix, 36 x 2.2 x 0.16	tonne	12.670	55000.00	696850.00	M-077
		Fine aggregate 2.36 mm and below, 82 per cent of total mix, 36 x 2.2 x 0.82 = 64.94 tonnes. Taking density 1.5	cum	43.300	700.00	30310.00	M-022
		Filler @ 2 per cent of total mix = 36 x 2.2 x 0.02	tonne	1.580	15000.00	23700.00	M-188
		Cost of water	KL	12.000	71.00	852.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				158592.31	
		e) Overhead charges @ 10 % on (a+b+c+d)				94526.05	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				103978.66	
		g) Cess @ 1% on (a+b+c+d+e+f)				11437.65	
		Cost for 24000 sqm = a+b+c+d+e+f+g				1155202.87	
		Rate per sqm = (a+b+c+d+e+f+g)/24000				48.13	
					say	<u>48.00</u>	

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	551.00	66.12	L-12
Mazdoor	day	3.000	424.00	1272.00	L-13
b) Machinery					
Mechanical broom @ 1250 sqm per hour	hour	6.000	473.00	2838.00	P&M-031
Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
Bitumen emulsion pressure distributor @ 1750 sqm per hour	tonne	6.000	1509.00	9054.00	P&M-004
c) Material					
Bitumen emulsion @ 0.75 kg per sqm	tonne	7.880	55000.00	433400.00	M-077
d) GST (multiplying factor 0.2016) on (a+b+c)				90836.55	
e) Overhead charges @ 10 % on (a+b+c+d)				54141.47	
f) Contractor's profit @ 10 % on (a+b+c+d+e)				59555.61	
g) Cess @ 1% on (a+b+c+d+e+f)				6551.12	
Cost for 10500 sqm = a+b+c+d+e+f+g				661662.87	
Rate per sqm = (a+b+c+d+e+f+g)/10500				63.02	
				say	63.00

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	551.00	88.16	L-12

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Mazdoor for precoating of grit	day	4.000	424.00	1696.00	L-13
		b) Material					
		Crushed stone grit 3 mm size @ 3.75 kg per sqm	cum	26.250	780.00	20475.00	M-024
		Bitumen emulsion for precoating grit @ 2 per cent of grit,39.38 x 0.02	tonne	0.790	55000.00	43450.00	M-077
						65709.16	
						6.26	
					say	<u>6.00</u>	
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	551.00	462.84	L-12
		Mazdoor	day	16.000	424.00	6784.00	L-13
		Mazdoor skilled	day	5.000	508.00	2540.00	L-15
		b) Machinery					
		Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	449.00	2694.00	P&M-077
		Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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	3847.00	23082.00	P&M-034
		Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1708.00	6661.20	P&M-037
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1641.00	6399.90	P&M-045
		c) Material					
		Bitumen emulsion @ 8 per cent	tonne	36.000	55000.00	1980000.00	M-077
		Filler (lime)@ 2 per cent	tonne	9.000	15000.00	135000.00	M-188
		Aggregates size 19 to 9.5 mm - 450 x 0.25 x 1/1.5	cum	75.000	1850.00	138750.00	M-045
		Aggregates size 9.5 to 6 mm - 450 x 0.29 x 1/1.5	cum	87.000	1550.00	134850.00	M-040

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BASES AND SURFACE COURSES (BITUMINOUS)

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	1300.00	140400.00	M-030
		d) GST (multiplying factor 0.2016) on (a+b+c)				523245.13	
		e) Overhead charges @ 10 % on (a+b+c+d)				311870.71	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				343057.78	
		g) Cess @ 1% on (a+b+c+d+e+f)				37736.36	
		Cost for 205 cum = a+b+c+d+e+f+g				3811371.92	
		Rate per cum = (a+b+c+d+e+f+g)/205				18592.06	
					say	<u>18592.00</u>	
		(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					
		Filler 2 per cent					
		Total aggregates 90 per cent					
		Proportion of aggregates					
		37.5 mm to 19 mm 25 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	551.00	462.84	L-12
		Mazdoor	day	16.000	424.00	6784.00	L-13
		Mazdoor skilled	day	5.000	508.00	2540.00	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	449.00	2694.00	P&M-077
		Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	18.00	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	3847.00	23082.00	P&M-034
		Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1708.00	6661.20	P&M-037
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1641.00	6399.90	P&M-045
		c) Material					
		Bitumen emulsion @ 8 per cent	tonne	36.000	55000.00	1980000.00	M-077
		Filler (lime)@ 2 per cent	tonne	9.000	15000.00	135000.00	M-188
		Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	1900.00	142500.00	M-048
		Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	1600.00	144000.00	M-047

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BASES AND SURFACE COURSES (BITUMINOUS)

SI. 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	1300.00	136500.00	M-030
		d) GST (multiplying factor 0.2016) on (a+b+c)				525059.53	
		e) Overhead charges @ 10 % on (a+b+c+d)				312952.15	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				344247.36	
		g) Cess @ 1% on (a+b+c+d+e+f)				37867.21	
		Cost for 205 cum = a+b+c+d+e+f+g				3824588.19	
		Rate per cum = (a+b+c+d+e+f+g)/205				18656.53	
					say	18657.00	
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 mm 26 per cent					
		9.5 mm to 6 mm 31 per cent					
		6 mm to 0.075 mm 36 per cent					
		a) Labour					
		Mate	day	0.840	551.00	462.84	L-12
		Mazdoor	day	16.000	424.00	6784.00	L-13
		Mazdoor skilled	day	5.000	508.00	2540.00	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	449.00	2694.00	P&M-077
		Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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	3847.00	23082.00	P&M-034
		Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1708.00	6661.20	P&M-037
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1641.00	6399.90	P&M-045
		c) Material					
		Cutback bitumen @ 5 per cent	tonne	22.500	63348.00	1425330.00	M-076
		Filler (lime)@ 2 per cent	tonne	9.000	15000.00	135000.00	M-188
		Aggregates size 19 to 9.5 mm - 450 x 0.26 x 1/1.5	cum	78.000	1850.00	144300.00	M-045
		Aggregates size 9.5 to 6 mm - 450 x 0.31 x 1/1.5	cum	93.000	1550.00	144150.00	M-040
		Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	1300.00	140400.00	M-030

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Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		d) GST (multiplying factor 0.2016) on (a+b+c)				414417.42	
		e) Overhead charges @ 10 % on (a+b+c+d)				247005.94	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				271706.53	
		g) Cess @ 1% on (a+b+c+d+e+f)				29887.72	
		Cost for 205 cum = a+b+c+d+e+f+g				3018659.55	
		Rate per cum = (a+b+c+d+e+f+g)/205				14725.17	
					say	14725.00	
<p>Note 1. Density of aggregates has been assumed 1.5 gms/cc</p> <p>2. Tack coat where provided will be measured and paid separately.</p> <p>*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</p>							
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					
		Filler 2 per cent					
		Total aggregates 93 per cent					
		Proportion of aggregates					
		37.5 mm to 19 mm 25 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	551.00	462.84	L-12
		Mazdoor	day	16.000	424.00	6784.00	L-13
		Mazdoor skilled	day	5.000	508.00	2540.00	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	449.00	2694.00	P&M-077
		Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 10 tonne capacity	tonne.km	450 x L	18.00	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	3847.00	23082.00	P&M-034
		Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1708.00	6661.20	P&M-037
		Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1641.00	6399.90	P&M-045
		c) Material					
		Cutback bitumen on @ 5 per cent	tonne	22.500	63348.00	1425330.00	M-076
		Filler (lime) @ 2 per cent	tonne	9.000	15000.00	135000.00	M-188
		Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	1900.00	142500.00	M-048
		Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	1600.00	144000.00	M-047
		Aggregates size 6 to 0.075 mm - 450 x 0.38 x 1/1.5	cum	114.000	1300.00	148200.00	M-030
		d) GST (multiplying factor 0.2016) on (a+b+c)				415596.78	
		e) Overhead charges @ 10 % on (a+b+c+d)				247708.87	

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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)				272479.76	
		g) Cess @ 1% on (a+b+c+d+e+f)				29972.77	
		Cost for 205 cum = a+b+c+d+e+f+g				3027250.12	
		Rate per cum = (a+b+c+d+e+f+g)/205				14767.07	
					say	14767.00	

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	551.00	462.84	L-12
Mazdoor	day	16.000	424.00	6784.00	L-13
Mazdoor skilled	day	5.000	508.00	2540.00	L-15

b) Machinery

Hot Mix Plant of appropriate capacity but not less than 75 tonnes/hour	hour	6.000	20099.00	120594.00	P&M-023
Electric generator set 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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	3847.00	23082.00	P&M-034
smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65	783.00	3053.70	P&M-044
Three wheel 80-100 kN Static Roller	hour	6.00x0.65	969.00	3779.10	P&M-059
Finish rolling with 6-8 tonnes smooth wheeled tandem rollers.	hour	6.00x0.65	1641.00	6399.90	P&M-045

c) Material

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

Density 2.20 tonne per cum

Weight 450 tonne

Bitumen 5 per cent

Filler 2 per cent

Sand of size 4.75 to 0.075 mm 93 per cent

Bitumen@ 5 per cent	tonne	22.500	57924.00	1303290.00	M-074
Filler (lime)@ 2 per cent	tonne	9.000	15000.00	135000.00	M-188
Sand of size 4.75 to 0.075 mm - 450 x 0.93 x 1/1.5	cum	288.620	650.00	187603.00	M-004

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SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		d) GST (multiplying factor 0.2016) on (a+b+c)				365004.97	
		e) Overhead charges @ 10 % on (a+b+c+d)				217554.55	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				239310.01	
		g) Cess @ 1% on (a+b+c+d+e+f)				26324.10	
		Cost for 205 cum = a+b+c+d+e+f+g				2658734.17	
		Rate per cum = (a+b+c+d+e+f+g)/205				12969.43	
					say	12969.00	

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	551.00	132.24	L-12
Mazdoor	day	6.000	424.00	2544.00	L-13

b) Machinery

Mechanical broom @ 1250 sqm per hour	hour	6.000	473.00	2838.00	P&M-031
Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1509.00	9054.00	P&M-004
Hydraulic Chip spreader	hour	6.000	3640.00	21840.00	P&M-025
Smooth wheeled road roller 8-10 tonne	hour	6.000	783.00	4698.00	P&M-044

c) Material

Modified binder	tonne	9.450	58000.00	548100.00	M-078
Crushed stone aggregates 5.6 mm size	cum	105.000	1300.00	136500.00	M-050

d) GST (multiplying factor 0.2016) on (a+b+c)				147098.29	
e) Overhead charges @ 10 % on (a+b+c+d)				87675.25	
f) Contractor's profit @ 10 % on (a+b+c+d+e)				96442.78	
g) Cess @ 1% on (a+b+c+d+e+f)				10608.71	
Cost for 10500 sqm = a+b+c+d+e+f+g				1071479.27	
Rate per sqm = (a+b+c+d+e+f+g)/10500				102.05	

say **102.00**

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	551.00	132.24	L-12
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BASES AND SURFACE COURSES (BITUMINOUS)

SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Mazdoor	day	6.000	424.00	2544.00	L-13
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	6.000	473.00	2838.00	P&M-031
		Air compressor 250 cfm capacity	hour	6.000	658.00	3948.00	P&M-001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1509.00	9054.00	P&M-004
		Hydraulic Chip spreader	hour	6.000	3640.00	21840.00	P&M-025
		Smooth wheeled road roller 8-10 tonne	hour	6.000	783.00	4698.00	P&M-044
		c) Material					
		Modified binder	tonne	11.550	58000.00	669900.00	M-078
		Crushed stone chipping 11.2 mm size	cum	105.000	1800.00	189000.00	M-051
		d) GST (multiplying factor 0.2016) on (a+b+c)				182237.17	
		e) Overhead charges @ 10 % on (a+b+c+d)				108619.14	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				119481.06	
		g) Cess @ 1% on (a+b+c+d+e+f)				13142.92	
		Cost for 10500 sqm = a+b+c+d+e+f+g				1327434.53	
		Rate per sqm = (a+b+c+d+e+f+g)/10500				126.42	
					say	126.00	

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	551.00	132.24	L-12
	Mazdoor	day	6.000	424.00	2544.00	L-13
	Mazdoor skilled	day	2.000	508.00	1016.00	L-15
b)	Machinery					
	Mechanical broom @ 1250 sqm per hour	hour	6.000	473.00	2838.00	P&M-031
	Air compressor 250 cfm capacity	hour	6.000	658.00	3948.00	P&M-001
	Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1509.00	9054.00	P&M-004
	Hydraulic Chip spreader	hour	6.000	3640.00	21840.00	P&M-025
	Smooth wheeled road roller 8-10 tonne	hour	6.000	783.00	4698.00	P&M-044
c)	Material					
	Modified binder	tonne	15.750	58000.00	913500.00	M-078
	Crushed stone aggregates 11.2 mm size	cum	126.000	1800.00	226800.00	M-051
d)	GST (multiplying factor 0.2016) on (a+b+c)				239172.24	
e)	Overhead charges @ 10 % on (a+b+c+d)				142554.25	
f)	Contractor's profit @ 10 % on (a+b+c+d+e)				156809.67	
g)	Cess @ 1% on (a+b+c+d+e+f)				17249.06	
Cost for 10500 sqm = a+b+c+d+e+f+g					1742155.46	
Rate per sqm = (a+b+c+d+e+f+g)/10500					165.92	
					say	166.00

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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	551.00	551.00	L-12
		Mazdoor	day	12.000	424.00	5088.00	L-13
		Mazdoor skilled	day	5.000	508.00	2540.00	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	23790.00	142740.00	P&M-064
		Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
		Front end loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
		Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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*	1708.00	6661.20	P&M-037
		Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	783.00	3053.70	P&M-044
		Water tanker 6 KL capacity	hour	1.000	724.00	724.00	P&M-060
		c) Material					
		Bitumen emulsion @ 45 litres per tonne	tonne	20.250	55000.00	1113750.00	M-077
		Crushed stone aggregates 40 mm nominal size	cum	297.000	1900.00	564300.00	M-055
		Cost of water	KL	6.000	71.00	426.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				379159.99	
		e) Overhead charges @ 10 % on (a+b+c+d)				225991.39	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				248590.53	
		g) Cess @ 1% on (a+b+c+d+e+f)				27344.96	
		Cost for 10500 sqm = a+b+c+d+e+f+g				2761840.77	
		Rate per sqm = (a+b+c+d+e+f+g)/205				13472.39	
					say	<u>13472.00</u>	

Note (Case I to III)

- These mixes are considered suitable for minor repair work and temporary road surface improvement.
- 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.
- 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.

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

SI. 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	551.00	551.00	L-12
			Mazdoor	day	12.000	424.00	5088.00	L-13
			Mazdoor skilled	day	5.000	508.00	2540.00	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	23790.00	142740.00	P&M-064
			Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
			Tipper 10 tonne capacity	tonne. km	450 x L	18.00	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*	1708.00	6661.20	P&M-037
			Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	783.00	3053.70	P&M-044
			Water tanker 6 KL capacity	hour	1.000	724.00	724.00	P&M-060
		c)	Material					
			Bitumen emulsion @ 70 litres per tonne	tonne	31.500	55000.00	1732500.00	M-077
			Crushed stone aggregates 14 mm nominal size	cum	287.000	1820.00	522340.00	M-052
			Cost of water	KL	6.000	71.00	426.00	M-189
		d)	GST (multiplying factor 0.2016) on (a+b+c)				495440.85	
		e)	Overhead charges @ 10 % on (a+b+c+d)				295298.48	
		f)	Contractor's profit @ 10 % on (a+b+c+d+e)				324828.32	
		g)	Cess @ 1% on (a+b+c+d+e+f)				35731.12	
			Cost for 10500 sqm = a+b+c+d+e+f+g				3608842.67	
			Rate per sqm = (a+b+c+d+e+f+g)/205				17604.11	
						say	17604.00	
5.22		(iii)	25 mm thickness					
		a)	Labour					
			Mate	day	1.000	551.00	551.00	L-12
			Mazdoor	day	12.000	424.00	5088.00	L-13
			Mazdoor skilled	day	5.000	508.00	2540.00	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	23790.00	142740.00	P&M-064
			Electric generator 125 KVA	hour	6.000	1135.00	6810.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
			Tipper 10 tonne capacity	tonne. km	450 x L	18.00	0.00	Lead =0 km & P&M-058

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

SI. 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*	1708.00	6661.20	P&M-037
		Smooth wheeled steel roller	hour	6.00x0.65*	783.00	3053.70	P&M-044
		Water tanker 6 KL capacity	hour	1.000	724.00	724.00	P&M-060
c)		Material					
		Bitumen emulsion @ 85 litres per tonne	tonne	38.250	55000.00	2103750.00	M-077
		Crushed stone aggregates 6 mm nominal size	cum	270.000	1300.00	351000.00	M-050
		Cost of water	KL	6.000	71.00	426.00	M-189
d)		GST (multiplying factor 0.2016) on (a+b+c)				535742.71	
e)		Overhead charges @ 10 % on (a+b+c+d)				319319.66	
f)		Contractor's profit @ 10 % on (a+b+c+d+e)				351251.63	
g)		Cess @ 1% on (a+b+c+d+e+f)				38637.68	
		Cost for 10500 sqm = a+b+c+d+e+f+g				3902405.58	
		Rate per sqm = (a+b+c+d+e+f+g)/205				19036.12	
					say	<u>19036.00</u>	

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 composed of 13.2 mm to 5.6 mm aggregates using Cold Mix Binder (Tailor made) to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 KN static roller capacity, finished to required level and grades to be followed by seal coat (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	551.00	440.80	L-12
		Mazdoor	day	18.000	424.00	7632.00	L-13
		Mazdoor skilled	day	2.000	508.00	1016.00	L-15
b)		Machinery					
		Concrete mixer 0.4/0.28 cum capacity	hour	6.000	291.00	1746.00	P&M-009
		Smooth wheeled steel roller 8-10 tonne	hour	5.000	783.00	3915.00	P&M-044
c)		Material					
		Cold mix binder @ 2.0-2.3 kg per sqm	tonne	1.940	66861.00	129710.34	M-197
		Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	1600.00	38880.00	M-043
d)		GST (multiplying factor 0.2016) on (a+b+c)				36961.37	
e)		Overhead charges @ 10 % on (a+b+c+d)				22030.15	
f)		Contractor's profit @ 10 % on (a+b+c+d+e)				24233.17	
g)		Cess @ 1% on (a+b+c+d+e+f)				2665.65	
		Cost for 900 sqm = a+b+c+d+e+f+g				269230.48	
		Rate per sqm = (a+b+c+d+e+f+g)/900				299.14	
					say	<u>299.00</u>	

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
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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	551.00	132.24	L-12
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Mazdoor	day	6.000	424.00	2544.00	L-13
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b) Machinery

Hydraulic Self propelled chip spreader	hour	6.000	3640.00	21840.00	P&M-025
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Tipper 5.5 cum capacity	hour	6.000	916.00	5496.00	P&M-048
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Front end loader 1 cum bucket capacity		6.000	1838.00	11028.00	P&M-017
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Bitumen pressure distributor @ 1750 sqm per hour		6.000	1509.00	9054.00	P&M-004
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Smooth wheeled roller 8-10 tonne weight		6.000	783.00	4698.00	P&M-044
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c) Material

Cold mix binder @ 1.2-1.4 kg per sqm	tonne	13.330	66861.00	891257.13	M-197
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Crushed stone chip passing 6.3 mm sieve applied @ 0.09 cum per 10 sqm	cum	92.250	1300.00	119925.00	M-050
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d) GST (multiplying factor 0.2016) on (a+b+c)				214900.43	
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e) Overhead charges @ 10 % on (a+b+c+d)				128087.48	
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f) Contractor's profit @ 10 % on (a+b+c+d+e)				140896.23	
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g) Cess @ 1% on (a+b+c+d+e+f)				15498.59	
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Cost for 10250 sqm = a+b+c+d+e+f+g				1565357.10	
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Rate per sqm = (a+b+c+d+e+f+g)/10250				152.72	
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say 153.00

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	551.00	88.16	L-12
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Mazdoor	day	4.000	424.00	1696.00	L-13
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b) Machinery

Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	2.000	449.00	898.00	P&M-077
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Electric Generator set 250 KVA	hour	2.000	1154.00	2308.00	P&M-081
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Front end loader 1 cum bucket capacity	hour	2.000	1838.00	3676.00	P&M-017
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CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

SI. 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'	87.00	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	3847.00	7694.00	P&M-034
		Smooth wheeled 8-10 tonnes capacity	hour	2.000	783.00	1566.00	P&M-044
c)		Material					
		Cold mix binder @ 1.0-1.2 kg per sqm	tonne	8.640	66861.00	577679.04	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	1300.00	61295.00	M-050
d)		GST (multiplying factor 0.2016) on (a+b+c)				132431.08	
e)		Overhead charges @ 10 % on (a+b+c+d)				78933.13	
f)		Contractor's profit @ 10 % on (a+b+c+d+e)				86826.44	
g)		Cess @ 1% on (a+b+c+d+e+f)				9550.91	
		Cost for 7858 sqm = a+b+c+d+e+f+g				964641.76	
		Rate per sqm = (a+b+c+d+e+f+g)/7858				122.76	
					say	123.00	

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	551.00	462.84	L-12
Mazdoor working with WMP, road sweeper, paver and roller	day	16.000	424.00	6784.00	L-13
Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15

b) Machinery

Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	5.000	449.00	2245.00	P&M-077
Electric Generator set 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Tipper 10 tonne capacity	tonne. km	104x'L'	87.00	0.00	Lead =0 km & P&M-047

Add 10 per cent of cost of carriage to cover cost of loading and unloading

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Paver finisher hydrostatic with sensor attachment	hour	6.000	3847.00	23082.00	P&M-034
		Smooth wheeled 8-10 tonnes capacity	hour	6.000	783.00	4698.00	P&M-044
		c) Material					
		Type - A					
		Cold mix binder @ 3.0 kg per sqm	tonne	30.750	66861.00	2055975.75	M-197
		Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27cum per 10 sqm	cum	276.750	1500.00	415125.00	M-041
		d) GST (multiplying factor 0.2016) on (a+b+c)				509819.10	
		e) Overhead charges @ 10 % on (a+b+c+d)				303868.37	
		e) Overhead charges @ 10 % on (a+b+c+d)				334255.21	
		g) Cess @ 1% on (a+b+c+d+e+f)				36768.07	
		Cost for 10250 sqm = a+b+c+d+e+f+g				3713575.34	
		Rate per sqm = (a+b+c+d+e+f+g)/10250				362.30	
					say	362.00	

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 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 capacity 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	551.00	462.84	L-12
Mazdoor working with WMP, road sweeper, paver and roller	day	16.000	424.00	6784.00	L-13
Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15

b) Machinery

Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	5.000	449.00	2245.00	P&M-077
Electric Generator set 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Tipper 10 tonne capacity	tonne. km	104x'L'	87.00	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	3847.00	23082.00	P&M-034
Smooth wheeled 8-10 tonnes capacity	hour	6.000	783.00	4698.00	P&M-044

c) Material

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
Type - B							
		Cold mix binder @ 3.3 kg per sqm	tonne	33.830	66861.00	2261907.63	M-197
		Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27cum per 10 sqm	cum	276.750	1200.00	332100.00	M-042
		d) GST (multiplying factor 0.2016) on (a+b+c)				534597.13	
		e) Overhead charges @ 10 % on (a+b+c+d)				318636.86	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				350500.55	
		g) Cess @ 1% on (a+b+c+d+e+f)				38555.06	
		Cost for 10250 sqm = a+b+c+d+e+f+g				3894061.07	
		Rate per sqm = (a+b+c+d+e+f+g)/10250				379.91	
					say	<u>380.00</u>	
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 finishing 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	551.00	462.84	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	424.00	6784.00	L-13
		Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15
		b) Machinery					
		Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	449.00	2694.00	P&M-077
		Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	473.00	1040.60	P&M-031
		Air Compressor 250 cfm	hour	2.200	658.00	1447.60	P&M-001
		Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
		Electric Generator set 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Tipper 10 tonne capacity	tonne. km	104x'L'	18.00	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*	783.00	3053.70	P&M-044
		Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	969.00	3779.10	P&M-059
		Finish rolling with 6-8 tonnes smooth wheeled tandem rollers.	hour	6.00x0.65*	1641.00	6399.90	P&M-045
		c) Material					

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MORTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
Type - B							
		Cold mix binder @ 5.5% by Wt. of mix	tonne	24.750	66861.00	1654809.75	M-197
		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	1860.00	210924.00	M-046
		10-5 mm 40 per cent	cum	113.400	1550.00	175770.00	M-040
		5m and below 20 per cent	cum	56.700	1300.00	73710.00	M-030
		* Any one of the alternative may be adopted as per approved design					
(ii)		For Grading II (19 mm nominal size)					
		d) GST (multiplying factor 0.2016) on (a+b+c)				440385.02	
		e) Overhead charges @ 10 % on (a+b+c+d)				262483.45	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				288731.80	
		g) Cess @ 1% on (a+b+c+d+e+f)				31760.50	
		Cost for 205 cum = a+b+c+d+e+f+g				3207810.26	
		Rate per cum = (a+b+c+d+e+f+g)/205 (For Grading II)				15647.85	
					say	15648.00	
<p>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.</p> <p>2. Quantity of bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.</p> <p>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.</p> <p>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</p>							
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	551.00	462.84	L-12

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

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	424.00	6784.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	508.00	2540.00	L-15
		b)	Machinery					
			Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	449.00	2694.00	P&M-077
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3847.00	23082.00	P&M-034
			Electric Generator set 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
			Tipper 10 tonne capacity	tonne. km	104x'L'	18.00	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*	783.00	3053.70	P&M-044
			Three wheel 80-100 kN Static Roller	hour	6.00x0.65*	969.00	3779.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem rollers.	hour	6.00x0.65*	1641.00	6399.90	P&M-045
		c)	Material					
			Cold mix binder @ 7.5% by Wt. of mix	tonne	33.750	66861.00	2256558.75	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	1550.00	245171.25	M-040
			4.75 and below W 43 per cent	cum	119.325	1300.00	155122.50	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 (multiplying factor 0.2016) on (a+b+c)				549077.77	
			e) Overhead charges @ 10 % on (a+b+c+d)				327267.78	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				359994.56	
			g) Cess @ 1% on (a+b+c+d+e+f)				39599.40	
			Cost for 195 cum = a+b+c+d+e+f+g				3999539.55	
			Rate per sqm = (a+b+c+d+e+f+g)/195 (For Grading II)				20510.46	
						say	<u>20510.00</u>	

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
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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 tipplers, laying with paver finisher equipped 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 tonne 24.750 41549.00 1028337.75 M-198
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%

Waste plastic additive tonne 1.980 42000.00 83160.00 M-199

Stone Aggregate (Single size) :12.5 cum 42.750 1820.00 77805.00 M-052
mm nominal size (Qty = 85.5 * 50 /100)

Stone Aggregate (Single size) :10 mm cum 42.750 1800.00 76950.00 M-051
nominal size (Qty = 85.5 * 50 /100)

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Stone Aggregate (Single size) :10 mm nominal size(Qty = 70.88 * 50 /100)	cum	35.440	1800.00	63792.00	M-051
		Stone Aggregate (Single size) :06 mm nominal size(Qty = 70.88 * 50 /100)	cum	35.440	1300.00	46072.00	M-050
		Stone chippings/ screenings 4.75 mm nominal size (Qty = 283.5 * 40 /100)	cum	113.400	1500.00	170100.00	M-041
		Dry hydrated lime (factory made)	quintal	127.600	300.00	38280.00	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	cum	9.890	0.00	0.00	
		(consitering density of lime as 1.29 T per cum) V = 12.758/1.29 = 9.89 cum					
		Tipper -5 Cum,	tonne/ km	4,500.000	0.00	0.00	
		Tipper 10 tonne capacity					
		(Taken 10 km average lead)Km					
		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	13681.00	41043.00	P&M-096
		Paver finisher Hydrostatic with sensor control 100 TPH	hour	6.000	3847.00	23082.00	P&M-034
		Generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
		Front end loader 1 cum bucket capacity (incl POL)	hour	6.000	1838.00	11028.00	P&M-017
		Smooth Wheeled Roller 8 to 10 tonne for initial break down rolling.(6*0.65)	hour	3.900	783.00	3053.70	P&M-044
		Vibratory roller 8 to 10 tonne for intermediate rolling.(6*0.65)	hour	3.900	856.00	3338.40	P&M-062 (A)
		Tandem Road Roller,	hour	3.900	1641.00	6399.90	P&M-045
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65)					
		d) Labour					
		Mate	each	0.840	551.00	462.84	L-12
		Beldar	each	14.000	424.00	5936.00	L-13
		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	508.00	2540.00	L-15
		Other Costs					
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				349434.21	
		f) Overhead charges @ 10 % on (a+b+c+d+e)				208273.88	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				229101.27	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				25201.14	
		Cost for 191 cum(450 Tonne) (a+b+c+d+e+f+g+h)				2545315.09	
		Cost per cum. (a+b+c+d+e+f+g+h)/191				13326.26	
					Say	13326.30	

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
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.					
		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	41549.00	1028337.75	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 = 283.50 cum 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 weight of bitumen i.e. 24.75*8%					
		Waste plastic additive	tonne	1.980	42000.00	83160.00	M-199
		Stone Aggregate (Single size) :12.5 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1820.00	77805.00	M-052
		Stone Aggregate (Single size) :10 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1800.00	76950.00	M-051
		Stone Aggregate (Single size) :10 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1800.00	63792.00	M-051
		Stone Aggregate (Single size) :06 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1300.00	46072.00	M-050
		Stone chippings/ screenings 4.75 mm nominal size (Qty = 283.5 * 40 /100)	cum	113.400	1500.00	170100.00	M-041
		Dry hydrated lime (factory made)	quintal	127.600	300.00	38280.00	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	

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Tipper -5 Cum	tonne/ km	4,500.000	0.00	0.00	
		Tipper 10 tonne capacity (Taken 10 km average lead) 450 x 10 = 4500 tonne Km					
		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:					
		Drum Type HMP of 60-90 TPH capacity	hour	6.000	10712.00	64272.00	P&M-097
		@ 75 tonne per hour actual output					
		Paver finisher Hydrostatic with sensor control 100 TPH	hour	6.000	3847.00	23082.00	P&M-034
		Generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
		Front end loader 1 cum bucket capacity (incl POL)	hour	6.000	1838.00	11028.00	P&M-017
		Smooth Wheeled Roller 8 to 10 tonne for initial break down rolling.(6*0.65)	hour	3.900	783.00	3053.70	P&M-044
		Vibratory roller 8 to 10 tonne for intermediate rolling.(6*0.65)	hour	3.900	856.00	3338.40	P&M-062 (A)
		Tandem Road Roller, Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65)	hour	3.900	1641.00	6399.90	P&M-045
		d) Labour					
		Mate	each	0.840	551.00	462.84	L-12
		Beldar	each	14.000	424.00	5936.00	L-20
		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	508.00	2540.00	L-15
		Other Costs					
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				345045.17	
		f) Overhead charges @ 10 % on (a+b+c+d+e)				205657.88	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				226223.66	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				24884.60	
		Cost for 191 cum(450 Tonne) (a+b+c+d+e+f+g+h)				2513344.90	
		Cost per cum. (a+b+c+d+e+f+g+h)/191				13158.87	
		Cost per cum (Per Tonne).			Say	13158.90	
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 equipped 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	37030.00	916492.50	M-078 (A)

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		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 = 283.50 cum 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	1820.00	77805.00	M-052
		Stone Aggregate (Single size) : 10 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1800.00	76950.00	M-051
		Stone Aggregate (Single size) : 10 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1800.00	63792.00	M-051
		Stone Aggregate (Single size) : 06 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1300.00	46072.00	M-050
		Stone chippings/ screenings 4.75 mm nominal size (Qty = 283.5 * 40 /100)	cum	113.400	1500.00	170100.00	M-041
		Dry hydrated lime (factory made)	quintal	127.600	300.00	38280.00	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	tonne/ km	4,500.000	0.00	0.00	
		Tipper -5 Cum					
		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	16471.00	49413.00	P&M-095
		Hot mix Plant 100 TPH Capacity	hour	3.000	13681.00	41043.00	P&M-096
		Paver finisher Hydrostatic with sensor control 100 TPH	hour	6.000	3847.00	23082.00	P&M-034
		Generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
		Front end loader 1 cum bucket capacity (incl POL)	hour	6.000	1838.00	11028.00	P&M-017
		Smooth Wheeled Roller 8 to 10 tonne for initial break down rolling. (6*0.65)	hour	3.900	783.00	3053.70	P&M-044

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

Sl. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Vibratory roller 8 to 10 tonne for intermediate rolling.(6*0.65)	hour	3.900	856.00	3338.40	P&M-062 (A)
		Tandem Road Roller, Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65)	hour	3.900	1641.00	6399.90	P&M-045
		d) Labour					
		Mate	each	0.840	400.00	336.00	L-12
		Beldar	each	14.000	424.00	5936.00	L-20
		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	508.00	2540.00	L-15
		Other Costs					
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				310985.24	
		f) Overhead charges @ 10 % on (a+b+c+d+e)				185357.07	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				203892.78	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				22428.21	
		Cost for 191 cum(450 Tonne)				2265248.80	
		Cost per cum (Per Tonne).				11859.94	
					Say	11859.90	

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 Refinery produced tonne 24.750 35116.00 869121.00 M-078 (B)

CRMB - 60,
'@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

Stone Aggregate (Single size) : cum 42.750 1820.00 77805.00 M-052

12.5 mm nominal size
(Qty = 85.5 * 50 /100)

CHAPTER - 5
BASES AND SURFACE COURSES (BITUMINOUS)

SI. No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks / Input ref.
		Stone Aggregate (Single size) : 10 mm nominal size (Qty = 85.5 * 50 /100)	cum	42.750	1800.00	76950.00	M-051
		Stone Aggregate (Single size) : 10 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1800.00	63792.00	M-051
		Stone Aggregate (Single size) : 06 mm nominal size (Qty = 70.88 * 50 /100)	cum	35.440	1300.00	46072.00	M-050
		Stone chippings/ screenings 4.75 mm nominal size (Qty = 283.5 * 40 /100)	cum	113.400	1500.00	170100.00	M-041
		Dry hydrated lime (factory made)	quintal	127.600	300.00	38280.00	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	16471.00	49413.00	P&M-095
		Hot mix Plant 100 TPH Capacity	hour	3.000	13681.00	41043.00	P&M-096
		Paver finisher Hydrostatic with sensor control 100 TPH	hour	6.000	3847.00	23082.00	P&M-034
		Generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
		Front end loader 1 cum bucket capacity (incl POL)	hour	6.000	1838.00	11028.00	P&M-017
		Smooth Wheeled Roller 8 to 10 tonne for initial break down rolling.(6*0.65)	hour	3.900	783.00	3053.70	P&M-044
		Vibratory roller 8 to 10 tonne for intermediate rolling.(6*0.65)	hour	3.900	856.00	3338.40	P&M-062 (A)
		Tandem Road Roller, Finish rolling with 6-8 tonnes smooth wheeled tandem roller.(6*0.65)	hour	3.900	1641.00	6399.90	P&M-045
		d) Labour					
		Mate	each	0.840	551.00	462.84	L-12
		Beldar	each	14.000	424.00	5936.00	L-13
		working with HMP, mechanical broom, paver, roller, asphalt cutter & assistance for setting out lines, levels and layout of construction					
		Skilled Beldar (for floor rubbing etc.) for checking line & levels	each	5.000	508.00	2540.00	L-15
		Other Costs					
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				301460.71	
		f) Overhead charges @ 10 % on (a+b+c+d+e)				179680.16	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				197648.17	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				21741.30	
		Cost for 191 cum(450 Tonne)				2195871.18	
		Cost per cum (Per Tonne).				11496.71	
					Say	11496.70	

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 transportation 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 purpose. Exact quantity of materials be determined for the job mix formula.

CHAPTER- 6
CEMENT CONCRETE PAVEMENTS

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. <i>Unit = cum</i> <i>Taking output = 450 cum (990 tonne)</i>					
		a) Labour					
		Mate	day	1.120	551.00	617.12	L-12
		Mazdoor skilled	day	6.000	508.00	3048.00	L-15
		Mazdoor	day	22.000	424.00	9328.00	L-13
		b) Machinery					
		Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
		Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	5170.00	31020.00	P&M-068
		Electric generator 100 KVA	hour	6.000	938.00	5628.00	P&M-080
		Paver with electronic sensor	hour	6.000	3847.00	23082.00	P&M-034
		Vibratory roller 8-10 t capacity	hour	8.000	969.00	7752.00	P&M-059
		Water tanker6 KL capacity	hour	8.000	724.00	5792.00	P&M-060
		Tipper	tonne.k m	990 x L	18.00	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	1870.00	757350.00	M-052 and M-054
		Coarse Sand as per IS: 383 @ 0.45 cum/cum of concrete	cum	203.000	650.00	131950.00	M-004
		Cement @ 150 kg/cum of concrete	tonne	67.500	9100.00	614250.00	M-081
		Cost of water	KL	48.000	71.00	3408.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				323417.43	
		e) Overhead charges @ 10 % on (a+b+c+d)				192767.06	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				212043.76	
		g) Cess @ 1% on (a+b+c+d+e+f)				23324.81	
		Cost for 205 cum = a+b+c+d+e+f+g				2355806.18	
		Rate per cum = (a+b+c+d+e+f+g)/450				5235.12	
					say	5235.00	

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.

CHAPTER- 6
CEMENT CONCRETE PAVEMENTS

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	551.00	1102.00	L-12
		Mazdoor skilled	day	15.000	508.00	7620.00	L-15
		Mazdoor	day	35.000	424.00	14840.00	L-13
b) Machinery							
		Road Sweeper @ 1250 sqm per hour	hour	2.800	473.00	1324.40	P&M-031
		Front end loader 1 cum bucket capacity	hour	18.000	1838.00	33084.00	P&M-017
		Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6.000	3770.00	22620.00	P&M-067
		Electric generator 250 KVA	hour	6.000	1154.00	6924.00	P&M-081
		Slip form paver with electronic sensor	hour	6.000	3690.00	22140.00	P&M-006
		Water tanker 6 KL capacity	hour	36.000	724.00	26064.00	P&M-060
		Transit truck agitator 5 cum capacity.	tonne.k m	2415xL	18.00	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	143.00	1716.00	P&M-083
		Texturing machine .	hour	12.000	301.00	3612.00	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	1870.00	1767150.00	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	650.00	307450.00	M-004
		Cement 43 grade @ 400 kg/cum of concrete	tonne	414.000	9100.00	3767400.00	M-081
		32 mm mild steel dowel bars of grade S 240	tonne	9.450	67000.00	633150.00	M-126
		16 mm deformed steel tie bars of grade S 415	tonne	1.170	67000.00	78390.00	M-082
		Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	32.00	117600.00	M-164
		Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	16.330	950.00	15513.50	M-141
		Joint sealant	kg	875.000	340.00	297500.00	M-120
		Sealant primer	kg	116.670	281.00	32784.27	M-097
		Plastic sheath, 1.25 mm thick for dowel bars	sqm	46.670	2.00	93.34	M-138
		Curing compound	liter	1850.000	59.00	109150.00	M-090
		Super plastisizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	64.00	132480.00	M-180
		Cost of water	KL	216.000	71.00	15336.00	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.				72739.97	
		d) GST (multiplying factor 0.2016) on (a+b+c)				1509537.15	
		e) Overhead charges @ 10 % on (a+b+c+d)				899732.06	

CHAPTER- 6
CEMENT CONCRETE PAVEMENTS

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)				989705.27	
		g) Cess @ 1% on (a+b+c+d+e+f)				108867.58	
		Cost for 1050cum = a+b+c+d+e+f+g				10995625.54	
		Rate per cum = (a+b+c+d+e+f+g)/1050				10472.02	
					say	<u>10472.00</u>	

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	551.00	661.20	L-12
Mazdoor skilled	day	7.000	508.00	3556.00	L-15
Mazdoor	day	23.000	424.00	9752.00	L-13

b) Machinery

Front end loader 1 cum bucket capacity	hour	6.000	1838.00	11028.00	P&M-017
Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	5170.00	31020.00	P&M-068
Electric generator 100 KVA	hour	6.000	938.00	5628.00	P&M-080
Paver with electronic sensor @ 75 cum/hr.	hour	6.000	3847.00	23082.00	P&M-034
Vibratory roller 8-10 t capacity	hour	8.000	969.00	7752.00	P&M-059
Water tanker with 5 km lead 6 KL capacity	hour	8.000	724.00	5792.00	P&M-060
Tipper	tonne.k m	990xL	18.00	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	1870.00	757350.00	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	650.00	131950.00	M-004
Cement @ 200 kg/cum of concrete	tonne	90.000	9100.00	819000.00	M-081
Cost of water	KL	48.000	71.00	3408.00	M-189

d) GST (multiplying factor 0.2016) on (a+b+c)					364891.81
e) Overhead charges @ 10 % on (a+b+c+d)					217487.10
f) Contractor's profit @ 10 % on (a+b+c+d+e)					239235.81
g) Cess @ 1% on (a+b+c+d+e+f)					26315.94
Cost for 450cum = a+b+c+d+e+f+g					2657909.86
Rate per cum = (a+b+c+d+e+f+g)/450					5906.47

say 5906.00

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 fabric with mesh size of 75X50 mm
- 3 Kerbstone laying and road marking has been provided for laying by mechanical means.
- 4 Back filling of foundation of boundary 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 aluminium 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-rigid 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 included.
- 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.

CHAPTER-8

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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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	551.00	396.72	L-12
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Mason	day	2.000	593.00	1186.00	L-11
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Mazdoor	day	16.000	424.00	6784.00	L-13
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b) Machinery

Kerb casting machine @ 60 metres/hour	hour	6.000	407.00	2442.00	P&M-029
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Concrete mixer 0.48/0.28 cum capacity	hour	12.000	291.00	3492.00	P&M-009
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Water tanker 6 KL capacity	hour	5.000	724.00	3620.00	P&M-060
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c) Material

Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	1900.00	41401.00	M-053
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Coarse sand 30 per cent	cum	10.900	650.00	7085.00	M-005
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Cement 11 per cent	tonne	5.700	9100.00	51870.00	M-081
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Cost of water	KL	30.000	71.00	2130.00	M-189
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d) GST (multiplying factor 0.2016) on (a+b+c)				24273.99	
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e) Overhead charges @ 10 % on (a+b+c+d)				14468.07	
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f) Contractor's profit @ 10 % on (a+b+c+d+e)				15914.88	
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g) Cess @ 1% on (a+b+c+d+e+f)				1750.64	
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Cost for 360 meter = a+b+c+d+e+f+g				176814.30	
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Rate per metre = (a+b+c+d+e+f+g)/360				491.15	
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say 491.00

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	551.00	66.12	L-12
------	-----	-------	--------	-------	------

Mason	day	1.000	593.00	593.00	L-11
-------	-----	-------	--------	--------	------

Mazdoor	day	2.000	424.00	848.00	L-13
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b) Machinery

Kerb casting machine @ 60 metres/hour	hour	6.000	407.00	2442.00	P&M-029
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CHAPTER-8

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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	3154.00	5046.40	P&M-003
		Water tanker 6 KL capacity	hour	5.000	724.00	3620.00	P&M-060
		Tipper 5.5 cum capacity	hour	6.000	916.00	5496.00	P&M-048
		c) Material					
		Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	1900.00	41401.00	M-053
		Coarse sand 30 per cent	cum	10.900	650.00	7085.00	M-004
		Cement 11 per cent	tonne	5.700	9100.00	51870.00	M-081
		Cost of water	KL	30.000	71.00	2130.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				24312.46	
		e) Overhead charges @ 10 % on (a+b+c+d)				14491.00	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				15940.10	
		g) Cess @ 1% on (a+b+c+d+e+f)				1753.41	
		Cost for 360 meter = a+b+c+d+e+f+g				177094.49	
		Rate per metre = (a+b+c+d+e+f+g)/360				491.93	
					say	492.00	

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 PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408

A Using Concrete Mixer

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	551.00	396.72	L-12
Mason	day	2.000	593.00	1186.00	L-11
Mazdoor	day	16.000	424.00	6784.00	L-13

b) Machinery

Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	407.00	2442.00	P&M-029
Concrete mixer 0.48/0.28	hour	16.000	291.00	4656.00	P&M-009
Water tanker 6 KL capacity	hour	6.000	724.00	4344.00	P&M-060

c) Material

Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	1900.00	69521.00	M-053
Coarse sand 30 per cent	cum	18.300	650.00	11895.00	M-005
Cement 10 per cent	tonne	9.010	9100.00	81991.00	M-081
Cost of water	KL	36.000	71.00	2556.00	M-189

d) GST (multiplying factor 0.2016) on (a+b+c)				37451.58	
e) Overhead charges @ 10 % on (a+b+c+d)				22322.33	
f) Contractor's profit @ 10 % on (a+b+c+d+e)				24554.56	
g) Cess @ 1% on (a+b+c+d+e+f)				2701.00	

CHAPTER-8

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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Cost for 300 meter = a+b+c+d+e+f+g 272801.19

Rate per metre = (a+b+c+d+e+f+g)/300 909.34

say 909.00

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 0.120 551.00 66.12 L-12

Mason day 1.000 593.00 593.00 L-11

Mazdoor day 2.000 424.00 848.00 L-13

b) Machinery

Kerb casting machine @ 50 metres/hour hour 6.000 407.00 2442.00 P&M-029
for laying kerb and channel

Concrete batching and mixing plant @ 15 cum/hr. hour 2.700 3154.00 8515.80 P&M-003

Water tanker 6 KL capacity hour 6.000 724.00 4344.00 P&M-060

Tipper of 5.5 cum capacity hour 6.000 916.00 5496.00 P&M-048

c) Material

Crushed stone aggregate 20 mm nominal size 60 per cent cum 36.590 1900.00 69521.00 M-053

Coarse sand 30 per cent cum 18.300 650.00 11895.00 M-004

Cement 10 per cent tonne 9.010 9100.00 81991.00 M-081

Cost of water KL 36.000 71.00 2556.00 M-189

d) GST (multiplying factor 0.2016) on (a+b+c) 37954.81

e) Overhead charges @ 10 % on (a+b+c+d) 22622.27

f) Contractor's profit @ 10 % on (a+b+c+d+e) 24884.50

g) Cess @ 1% on (a+b+c+d+e+f) 2737.30

Cost for 300 meter = a+b+c+d+e+f+g 276466.80

Rate per metre = (a+b+c+d+e+f+g)/300 921.56

say 922.00

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 0.120 551.00 66.12 L-12

Painter day 2.000 593.00 1186.00 L-18

Mazdoor day 1.000 424.00 424.00 L-13

b) Material

Paint Litre 0.700 450.00 315.00 M-131

c) GST (multiplying factor 0.2016) on (a+b) 401.41

d) Overhead charges @ 10 % on (a+b+c) 239.25

e) Contractor's profit @ 10 % on (a+b+c+d) 263.18

f) Cess @ 1% on (a+b+c+d+e) 28.95

CHAPTER-8

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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				2923.91	
		Rate per cm height per letter = (a+b+c+ d+e+f)/1600				1.83	
					say	<u>1.80</u>	
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	551.00	38.57	L-12
		Painter Ist class	day	1.250	593.00	741.25	L-18
		Mazdoor	day	0.500	424.00	212.00	L-13
		b) Material					
		Paint	Litre	0.500	450.00	225.00	M-131
		c) GST (multiplying factor 0.2016) on (a+b)				245.31	
		d) Overhead charges @ 10 % on (a+b+c)				146.21	
		e) Contractor's profit @ 10 % on (a+b+c+d)				160.83	
		f) Cess @ 1% on (a+b+c+d+e)				17.69	
		Cost for 1600 cm = a+b+c+d+e+f				1786.86	
		Rate per cm height per letter = (a+b+c +d+e+f)/1600				1.12	
					say	<u>1.10</u>	
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	524.00	115.28	Item No. 3.13
		ii) Cement concrete M15 grade	cum	0.120	9371.00	1124.52	Item 12.8 (A)
		iii) Painting angle iron post two coats	sqm	0.430	141.00	60.63	Item 8.9
		(Including GST,OH,CP &Cess of i,ii & iii)					
		a) Labour (For fixing at site)					
		Mate	day	0.010	551.00	5.51	L-12
		Mazdoor	day	0.200	424.00	84.80	L-13
		b) Material					
		Mild steel angle iron 75 mm x 75 mm x 6 mm,2.85 metres long	kg	19.000	50.73	963.87	M-179 /1000
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size 0.9 sqm	sqm	0.900	170.00	153.00	M-061
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.					
		c) Machinery					
		Tractor-trolley	hour	0.020	530.00	10.60	P&M-053
		d) GST (multiplying factor 0.2016) on (a+b+c)				245.50	
		e) Overhead charges @ 10 % on (a+b+c+d)				146.33	

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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f)		Contractor's profit @ 10 % on (a+b+c+d+e)				160.96	
g)		Cess @ 1% on (a+b+c+d+e+f)				17.71	
		Cost for 0.9 sqm = i+ii+iii+ a+b+c+d+e+f+g				3088.71	
		Rate per sqm (for sign having area upto 0.9 sqm) = (i+ii+iii+a+b+c+d+e+f+g)/0.90				3431.90	

say 3432.00

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 concrete 45 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	524.00	225.32	Item No. 3.13
ii)	Cement concrete M15 grade	cum	0.240	9371.00	2249.04	Item 12.8 (A)
iii)	Painting angle iron post 2 coats	sqm	0.860	141.00	121.26	Item 8.9

(Including GST, OH, CP & Cess of i, ii & iii)

a) Labour (For fixing at site)

Mate	day	0.010	551.00	5.51	L-12
Mazdoor	day	0.300	424.00	127.20	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	50.73	1927.74	M-179 /1000
Aluminium sheeting fixed with encapsulated lens type reflective sheeting	sqm	1.500	170.00	255.00	M-061

Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.

c) Machinery

Tractor-trolley	hour	0.020	530.00	10.60	P&M-053
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d) GST (multiplying factor 0.2016) on (a+b+c) 468.93

e) Overhead charges @ 10 % on (a+b+c+d) 279.50

f) Contractor's profit @ 10 % on (a+b+c+d+e) 307.45

g) Cess @ 1% on (a+b+c+d+e+f) 33.82

Cost for 1.5 sqm = i+ii+iii+ a+b+c+d+e+f+g 6011.37

Rate per sqm (for sign having area more than 0.9 sqm) =
i+ii+iii+a+b+c+d+e+f+g)/1.50 6679.30

say 6679.00

Note i) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately

ii) Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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					
		<i>Unit = sqm</i>					
		<i>Taking output = 40 sqm</i>					
		a) Labour					
		Mate	day	0.120	551.00	66.12	L-12
		Painter	day	2.000	593.00	1186.00	L-18
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) Material					
		Paint conforming to requirement of clause 803.3.	Litre	6.000	450.00	2700.00	M-132
		Add for scaffolding @ 1 per cent of labour cost where required				27.00	
		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.				218.81	
		c) GST (multiplying factor 0.2016) on (a+b)				931.78	
		d) Overhead charges @ 10 % on (a+b+c)				555.37	
		e) Contractor's profit @ 10 % on (a+b+c+d)				610.91	
		f) Cess @ 1% on (a+b+c+d+e)				67.20	
		Cost for 40 sqm = a+b+c+d+e+f				6787.19	
		Rate per sqm = (a+b+c+d+e+f)/40				169.68	
					<i>say</i>	<u>170.00</u>	
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.030	551.00	16.53	L-12
		Painter	day	0.450	593.00	266.85	L-18
		Mazdoor	day	0.250	424.00	106.00	L-13
		b) Material					
		Paint ready mixed approved brand.	Litre	1.250	450.00	562.50	M-131
		Add @ 1 per cent on cost of material for scaffolding				5.63	
		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.				47.59	
		c) GST (multiplying factor 0.2016) on (a+b)				202.63	
		d) Overhead charges @ 10 % on (a+b+c)				120.77	
		e) Contractor's profit @ 10 % on (a+b+c+d)				132.85	
		f) Cess @ 1% on (a+b+c+d+e)				14.61	
		Cost for 10 sqm = a+b+c+d+e+f				1475.96	
		Rate per sqm = (a+b+c+d+e+f)/10				147.60	
					<i>say</i>	<u>148.00</u>	

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.030	551.00	16.53	L-12
		Painter	day	0.500	593.00	296.50	L-18
		Mazdoor	day	0.200	424.00	84.80	L-13
		b) Material					
		Paint ready mixed of approved brand.	Litre	1.500	450.00	675.00	M-131
		Add @ 1 per cent on cost of material for scaffolding				6.75	
		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.				53.64	
		c) GST (multiplying factor 0.2016) on (a+b)				228.46	
		d) Overhead charges @ 10 % on (a+b+c)				136.17	
		e) Contractor's profit @ 10 % on (a+b+c+d)				149.79	
		f) Cess @ 1% on (a+b+c+d+e)				16.48	
		Cost for 10 sqm = a+b+c+d+e+f				1664.12	
		Rate per sqm= (a+b+c+d+e+f)/10				166.41	
					say	<u>166.00</u>	
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.090	551.00	49.59	L-12
		Painter	day	0.550	593.00	326.15	L-18
		Mazdoor	day	1.550	424.00	657.20	L-13
		b) Material					
		Road marking Paint as per IS :164	Litre	1.480	450.00	666.00	M-132
		c) GST (multiplying factor 0.2016) on (a+b)				342.51	
		d) Overhead charges @ 10 % on (a+b+c)				204.15	
		e) Contractor's profit @ 10 % on (a+b+c+d)				224.56	
		f) Cess @ 1% on (a+b+c+d+e)				24.70	
		Cost for 10 sqm = a+b+c+d+e+f				2494.86	
		Rate per sqm= (a+b+c+d+e+f)/10				249.49	
					say	<u>249.00</u>	
8.11		(ii) Up to 10 cm in width					
		<i>Unit = sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.070	551.00	38.57	L-12
		Painter	day	0.350	593.00	207.55	L-18

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Mazdoor	day	1.350	424.00	572.40	L-13
		b) Material					
		Road marking paint	Litre	1.480	450.00	666.00	M-132
		c) GST (multiplying factor 0.2016) on (a+b)				299.28	
		d) Overhead charges @ 10 % on (a+b+c)				178.38	
		e) Contractor's profit @ 10 % on (a+b+c+d)				196.22	
		f) Cess @ 1% on (a+b+c+d+e)				21.58	
		Cost for 10 sqm = a+b+c+d+e+f				2179.98	
		Rate per sqm= (a+b+c+d+e+f)/10				218.00	
					say	<u>218.00</u>	
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	551.00	33.06	L-12
		Painter Ist class	day	0.300	593.00	177.90	L-18
		Mazdoor	day	1.250	424.00	530.00	L-13
		b) Material					
		Road marking paint	Litre	0.900	450.00	405.00	M-132
		c) GST (multiplying factor 0.2016) on (a+b)				231.03	
		d) Overhead charges @ 10 % on (a+b+c)				137.70	
		e) Contractor's profit @ 10 % on (a+b+c+d)				151.47	
		f) Cess @ 1% on (a+b+c+d+e)				16.66	
		Cost for 10 sqm = a+b+c+d+e+f				1682.82	
		Rate per sqm= (a+b+c+d+e+f)/10				168.28	
					say	<u>168.00</u>	
8.12		(ii) Up to 10 cm in width					
		Unit = sqm					
		Taking output = 10 sqm					
		a) Labour					
		Mate	day	0.070	551.00	38.57	L-12
		Painter Ist class	day	0.350	593.00	207.55	L-18
		Mazdoor	day	1.350	424.00	572.40	L-13
		b) Material					
		Road marking Paint	Litre	0.900	450.00	405.00	M-132
		c) GST (multiplying factor 0.2016) on (a+b)				246.66	
		d) Overhead charges @ 10 % on (a+b+c)				147.02	
		e) Contractor's profit @ 10 % on (a+b+c+d)				161.72	
		f) Cess @ 1% on (a+b+c+d+e)				17.79	
		Cost for 10 sqm = a+b+c+d+e+f				1796.71	
		Rate per sqm= (a+b+c+d+e+f)/10				179.67	
					say	<u>180.00</u>	
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.					

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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

Taking output = 600 sqm

a) Labour

Mate	day	0.030	551.00	16.53	L-12
Mazdoor	day	0.750	424.00	318.00	L-13

b) Machinery

Road marking machine @ 60 sqm per hour	hour	10.000	128.00	1280.00	P&M-043
Tractor-trolley	hour	0.500	530.00	265.00	P&M-053

c) Material

Hot applied thermoplastic compound	Litre	1500.000	209.00	313500.00	M-118
Reflectorising glass beads	kg	150.000	243.00	36450.00	M-152

d) GST (multiplying factor 0.2016) on (a+b+c)

70928.83

e) Overhead charges @ 10 % on (a+b+c+d)

42275.84

f) Contractor's profit @ 10 % on (a+b+c+d+e)

46503.42

g) Cess @ 1% on (a+b+c+d+e+f)

5115.38

Cost for 600 sqm = a+b+c+d+e+f+g

516653.00

Rate per sqm = a+b+c+d+e+f+g)/600

861.09

say 861.00

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 M15 grade 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	9371.00	22021.85	Item 12.8 (A)
b) Steel reinforcement @ 5 kg per sqm	kg	22.080	120.32	2656.67	Item 13.6/1000
c) Excavation in soil for foundation	cum	1.680	524.00	880.32	Item No. 3.13
d) Painting two coats on concrete surface	sqm	9.850	162.00	1595.70	Item 8.8
e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	1.10	1980.00	Item 8.3

(Including GST, OH, CP & Cess of a, b, c, d & e)

Transportation and fixing

f) Labour

Mate	day	0.260	551.00	143.26	L-12
Mason	day	0.600	593.00	355.80	L-11
Mazdoor including loading/unloading	day	6.000	424.00	2544.00	L-13

g) Machinery

Tractor-trolley	hour	6.000	530.00	3180.00	P&M-053
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h) GST (multiplying factor 0.2016) on (f+g)

1254.57

i) Overhead charges @ 10 % on (f+g+h)

747.76

j) Contractor's profit @ 10 % on (f+g+h+i)

822.54

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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)				90.48	
		Cost for 6 Nos. 5th km stone = a+b+c+ d+e +f+g+h +i +j+k				38272.95	
		Rate for each 5th km stone = (a+b+c+d+e +f+g+h+i+j+k)/6				6378.83	
					say	<u>6379.00</u>	
8.14		(ii) Ordinary kilometer stone (precast)					
		Unit = Nos.					
		Taking output = 14 Nos.					
		a) M-15 grade of concrete	cum	3.770	9371.00	35328.67	Item 12.8 (A)
		b) Steel reinforcement @ 5 kg per sqm	kg	26.320	120.32	3166.82	Item 13.6/1000
		c) Excavation in soil for foundation	cum	2.770	524.00	1451.48	Item No. 3.13
		d) Painting two coats on concrete surface	sqm	11.410	162.00	1848.42	Item 8.8
		e) Lettering on km post (average 12 letters of 10 cm height each)	per cm per letter	1680.000	1.10	1848.00	Item 8.3
		(Including GST,OH,CP &Cess of a,b,c,d & e)					
		Transportation and fixing					
		f) Labour					
		Mate	day	0.320	551.00	176.32	L-12
		Mason	day	1.000	593.00	593.00	L-11
		Mazdoor	day	7.000	424.00	2968.00	L-13
		g) Machinery					
		Tractor-trolley	hour	6.000	530.00	3180.00	P&M-053
		h) GST (multiplying factor 0.2016) on (f+g)				1394.53	
		i) Overhead charges @ 10 % on (f+g+h)				831.19	
		j) Contractor's profit @ 10 % on (f+g+h+i)				914.30	
		k) Cess @ 1% on (f+g+h+i+j)				100.57	
		Cost for 14 Nos. ordinary km stone = (a+b+ c +d+e+f+g+h+i+j+k)				53801.30	
		Rate for each ordinary km stone = (a+b+c +d+e+f+g+h+i+j+k)/14				3842.95	
					say	<u>3843.00</u>	
8.14		(iii) Hectometer stone (precast)					
		Unit = Nos.					
		Taking output = 33 Nos.					
		a) M-15 grade of concrete	cum	1.580	9371.00	14806.18	Item 12.8 (A)
		b) Steel reinforcement @ 5 kg per sqm	kg	66.000	120.32	7941.12	Item 13.6/1000
		c) Excavation in soil for foundation	cum	1.390	524.00	728.36	Item No. 3.13
		d) Painting two coats on concrete surface	sqm	6.270	162.00	1015.74	Item 8.8
		e) Lettering on km post (average 1 letter of 10 cm height each)	per cm per letter	330.000	1.10	363.00	Item 8.3
		(Including GST,OH,CP &Cess of a,b,c,d & e)					

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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	551.00	187.34	L-12
		Mason	day	1.500	593.00	889.50	L-11
		Mazdoor	day	7.000	424.00	2968.00	L-13
g) Machinery							
		Tractor-trolley	hour	6.000	530.00	3180.00	P&M-053
h) GST (multiplying factor 0.2016) on (f+g)						1456.53	
i) Overhead charges @ 10 % on (f+g+h)						868.14	
j) Contractor's profit @ 10 % on (f+g+h+i)						954.95	
k) Cess @ 1% on (f+g+h+i+j)						105.04	
Cost for 33 Nos. Hectometer stone = (a+b +c +d+e+f+ g+h+i+j+k)						35463.90	
Rate for each Hectometer stone = (a+b +c +d+e+f+ g+h+i+j+k) 33						1074.66	
						say	<u>1075.00</u>

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	9371.00	11713.75	Item 12.8 (A)
b) Steel reinforcement	kg	79.800	120.32	9601.54	Item 13.6/1000
c) Excavation in soil	cum	10.720	524.00	5617.28	Item No. 3.13
d) Lettering, each 10 cm high	per letter per cm high	2280.000	1.10	2508.00	Item 8.3

(Including GST,OH,CP &Cess of a,b,c & d)

Transportation and fixing

e) Labour							
		Mate	day	0.570	551.00	314.07	L-12
		Mazdoor	day	14.250	424.00	6042.00	L-13
f) Machinery							
		Tractor-trolley	hour	6.000	530.00	3180.00	P&M-053
g) Material							
		Stone spall	cum	11.970	300.00	3591.00	M-008
h) GST (multiplying factor 0.2016) on (e+f+g)						2646.42	
i) Overhead charges @ 10 % on (e+f+g+h)						1577.35	
j) Contractor's profit @ 10 % on (e+f+g+h+i)						1735.08	
k) Cess @ 1% on (f+g+h+i+j)						190.86	
Cost for 57 Nos. boundary pillar = (a+b +c+d +e+ f+g+h+i+j+k)						48717.35	
Rate for each boundary pillar = (a+b+c+d+e+ f+g+h+i+j+k)/57						854.69	
						say	<u>855.00</u>

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Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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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	551.00	49.59	L-12
Blacksmith	day	0.250	593.00	148.25	L-02
Mazdoor	day	2.000	424.00	848.00	L-13

b) Material

Barbed wire 335 metres length @ 9.38 kg per 100 metres	kg	31.420	102.00	3204.84	M-063
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MS angle iron 40 mm x 40mm x 6 mm, 23 metres in length @ 3.5 kg per metre	kg	80.500	50.73	4083.77	M-179 /1000
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Add for GI staple binding wire, drilling holes etc. @ 2 per cent of the cost of material				145.77	
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c) Painting

Applying two coats of painting on exposed surface of angle iron posts (Rate as per item no. 8.9)	sqm	2.110	141.00	297.51	Item 8.9
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c) GST (multiplying factor 0.2016) on (a+b)				1709.61	
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e) Overhead charges @ 10 % on (a+b+d)				1018.98	
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f) Contractor's profit @ 10 % on (a+b+d+e)				1120.88	
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g) Cess @ 1% on (a+b+d+e+f)				123.30	
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Cost for 30 metres fencing = a+b+c+d+e+f+g				12750.50	
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Rate per metre = (a+b+c+d+e+f+g)/30				425.02	
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say 425.00

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

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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	551.00	66.12	L-12
		Blacksmith	day	0.400	593.00	237.20	L-02
		Mazdoor	day	2.500	424.00	1060.00	L-13
		b) Material					
		Barbed wire 428 metres length @ 9.38 kg per 100 metres	kg	40.150	102.00	4095.30	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	50.73	7710.96	M-179 /1000
		Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material				236.13	
		c) Painting					
		Applying two coats of painting on exposed surface of angle iron posts (Including GST, OH, CP & Cess)	sqm	3.960	141.00	558.36	Item 8.9
		c) GST (multiplying factor 0.2016) on (a+b)				2702.59	
		e) Overhead charges @ 10 % on (a+b+d)				1610.83	
		f) Contractor's profit @ 10 % on (a+b+d+e)				1771.91	
		g) Cess @ 1% on (a+b+d+e+f)				194.91	
		Cost for 30 metres fencing = a+b+c+d+e+f+g				20244.31	
		Rate per metre fencing = (a+b+c +d+e+f+g)/30				674.81	
					say	675.00	

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	551.00	66.12	L-12
Welder	day	1.000	593.00	593.00	L-02
Mazdoor	day	2.000	424.00	848.00	L-13

b) Material

i) Angle iron for posts 50 x 50 x 6 mm	kg	106.000	50.73	5377.38	M-179 /1000
ii) Runner flat 50 x 5 mm	kg	26.000	50.73	1318.98	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	69.00	10419.00	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			
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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	530.00	53.00	P&M-053
		d) Painting					
		Painting two coats including priming	sqm	8.000	141.00	1128.00	Item 8.9
		e) GST (multiplying factor 0.2016) on (a+b+c)				3764.98	
		f) Overhead charges @ 10 % on (a+b+c+e)				2244.05	
		g) Contractor's profit @ 10 % on (a+b+c+e+f)				2468.45	
		h) Cess @ 1% on (a+b+c+e+f+g)				270.87	
		Cost for 30 metre = a+b+c+d+e+f+g+h				28551.83	
		Rate per metre = (a+b+c+d+e+f+g+h)/30				951.73	
					say	952.00	
		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	524.00	681.20	Item No. 3.13
		ii) Foundation concrete M-15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.650	9371.00	6091.15	Item 12.8 (A)
		iii) Painting of pipe	sqm	4.710	141.00	664.11	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	141.00	304.56	Item 8.9
		(Including GST,OH,CP &Cess of i,ii,iii & iv)					
		a) Labour (For fixing at site)					
		Mate	day	0.010	551.00	5.51	L-12
		Mazdoor	day	0.250	424.00	106.00	L-13
		Plumber	day	0.010	593.00	5.93	L-02
		b) Material					
		Steel pipe 50 mm external dia as per IS:1239	metre	30.000	280.00	8400.00	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	50.73	5040.53	M-179 /1000
		Add for drilling holes @ 2 per cent of cost of channels				100.81	
		c) Machinery					
		Tractor-trolley	hour	0.040	530.00	21.20	P&M-053
		e) GST (multiplying factor 0.2016) on (a+b+c)				2757.88	
		e) Overhead charges @ 10 % on (a+b+c+d)				1643.79	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1808.17	

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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)				198.90	
		Cost for 10 metre = i+ii+iii+iv+ a+b+c+d+e+f+g				27829.74	
		Rate per metre = (i+ii+iii+iv+a+b+c+d+e+f+g)/10				2782.97	
					say	<u>2783.00</u>	
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 posts 1.8 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	524.00	681.20	Item No. 3.13
		ii) Foundation concrete M - 15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.650	9371.00	6091.15	Item 12.8 (A)
		iii) RCC M - 20 for pre cast posts 6 nos of 1.8 metres each	cum	0.320	11044.00	3534.08	Item 14.1(A)
		iv) Painting of pipe (Including GST, OH, CP & Cess of i, ii, iii & iv)	sqm	4.710	141.00	664.11	Item 8.9
		a) Labour					
		Mate	day	0.010	551.00	5.51	L-12
		Mazdoor	day	0.350	424.00	148.40	L-13
		Plumber	day	0.010	593.00	5.93	L-02
		b) Material					
		Steel pipe 50 mm dia as per IS:1239	metre	30.000	280.00	8400.00	M-175
		c) Machinery					
		Tractor-trolley	hour	0.250	530.00	132.50	P&M-053
		e) GST (multiplying factor 0.2016) on (a+b+c)				1752.38	
		e) Overhead charges @ 10 % on (a+b+c+d)				1044.47	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1148.92	
		g) Cess @ 1% on (a+b+c+d+e+f)				126.38	
		Cost for 10 metre = i+ii+iii+iv+ a+b+c+d+e+f+g				23735.03	
		Rate per metre = (i+ii+iii+iv+a+b+c+d+e+f+g)/10				2373.50	
					say	<u>2374.00</u>	
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	11044.00	33132.00	Item 14.1(A)
		b) Labour					
		Mate	day	0.040	551.00	22.04	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13

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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	67000.00	18760.00	M-082
		Pre-moulded asphalt filler board	sqm	0.320	71.00	22.72	M-144
		c) GST (multiplying factor 0.2016) on (a+b)				3876.52	
		e) Overhead charges @ 10 % on (b+c+d)				2310.53	
		f) Contractor's profit @ 10 % on (b+c+d+e)				2541.58	
		g) Cess @ 1% on (b+c+d+e+f)				279.57	
		Cost for 10 metre = a+b+c+d+e+f+g				61368.96	
		Rate per metre = (a+b+c+d+e+f+g)/10				6136.90	
					say	<u>6137.00</u>	
		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 fittings 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	551.00	33.06	L-12
		Blacksmith	day	0.500	593.00	296.50	L-02
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	530.00	53.00	P&M-053
		c) Material					
		Corrugated sheet, 3 mm thick, "W" beam section railing, 4.5 m in length	kg	41.210	50.73	2090.58	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	50.73	4492.65	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	50.73	823.86	M-179 /1000
		Nuts and bolts	kg	20.000	120.00	2400.00	M-130
		Add 25 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				2451.77	
		e) GST (multiplying factor 0.2016) on (a+b+c)				2633.99	
		e) Overhead charges @ 10 % on (a+b+c+d)				1569.94	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1726.94	
		g) Cess @ 1% on (a+b+c+d+e+f)				189.96	
		Cost for 4.5 metre = a+b+c+d+e+f+g				19186.25	
		Rate per metre = (a+b+c+d+e+f+g)/4.5				4263.61	
					say	<u>4264.00</u>	

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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	551.00	33.06	L-12
		Blacksmith	day	0.500	593.00	296.50	L-02
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) Machinery					
		Tractor-trolley	hour	0.100	530.00	53.00	P&M-053
		c) Material					
		Corrugated sheet, 3 mm thick, "Thrie" beam section railing, 4.5 m in length	kg	72.940	71.00	5178.74	M-088
		Channel post 150 x 75 x 5 mm, 2 m long, 3 Nos @ 16.4 kg per metre	kg	98.400	50.73	4991.83	M-179 /1000
		Spacer 150 x 75 x 5 mm channel 0.546 m long, 3 Nos	kg	26.860	50.73	1362.61	M-179 /1000
		Nuts and bolts	kg	30.000	120.00	3600.00	M-130
		Add 15 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				2269.98	
		e) GST (multiplying factor 0.2016) on (a+b+c)				3671.08	
		e) Overhead charges @ 10 % on (a+b+c+d)				2188.08	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				2406.89	
		g) Cess @ 1% on (a+b+c+d+e+f)				264.76	
		Cost for 4.5 metre = a+b+c+d+e+f+g				26740.53	
		Rate per metre= (a+b+c+d+e+f+g)/4.5				5942.34	
						say 5942.00	
		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.					

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Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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Unit = Running metre

Taking output = 15 metre

a) Labour

Mate	day	0.120	551.00	66.12	L-12
Mazdoor	day	2.000	424.00	848.00	L-13
Blacksmith	day	1.000	593.00	593.00	L-02

b) Material

i) RS Joist 100 x 75 mm - 16.5 m @ 11.5 kg per metre	kg	190.000	50.73	9638.70	M-179 /1000
ii) Struts - 2 Nos. for terminal posts, 2 m long each 2 x 2 x 11.50	kg	46.000	50.73	2333.58	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	50.73	9557.53	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	823.00	53495.00	M-177

Add 5 per cent of cost of material for drilling, gripping, fixing, fabrication and welding consumables 3751.24

c) Painting

Applying 2 coats of painting on exposed surface	sqm	16.500	141.00	2326.50	Item 8.9
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d) Machinery

Tractor-trolley	hour	0.250	530.00	132.50	P&M-053
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e) GST (multiplying factor 0.2016) on (a+b+d) 16211.80

f) Overhead charges @ 10 % on (a+b+d+e) 9662.75

g) Contractor's profit @ 10 % on (a+b+d+e+f) 10629.02

h) Cess @ 1% on (a+b+d+e+f+g) 1169.19

Cost for 15 m = a+b+c+d+e+f+g+h 120414.93

Rate per m = (a+b+c+d+e+f+g+h)/15 8027.66

say 8028.00

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	551.00	16.53	L-12
Mazdoor	day	0.500	424.00	212.00	L-13
Electrician	day	0.250	593.00	148.25	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	10625.00	10625.00	M-171
ii) Sodium vapour lamp	each	1.000	2125.00	2125.00	M-168

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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				637.50	
		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	141.00	810.75	Item 8.9
		For fixing in Footpath					
		Providing two coats of alluminium paint over steel circular hollow pipe with overhang on one side (Including GST, OH, CP & Cess of C)	sqm	4.630	141.00	652.83	Item 8.9
		(i) For Fixing in Median					
		c) GST (multiplying factor 0.2016) on (a+b)				2774.88	
		e) Overhead charges @ 10 % on (a+b+d)				1653.92	
		f) Contractor's profit @ 10 % on (a+b+d+e)				1819.31	
		g) Cess @ 1% on (a+b+d+e+f)				200.12	
		Rate per light for fixing in Median= a+b+c+d+e+f+g				21676.09	
					say	21676.00	
		(ii) For fixing in Footpath					
		Rate per light for Fixing in Footpath = a+b+c+d+e				20865.34	
					say	20865.00	
		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	551.00	11.02	L-12
		Mazdoor	day	0.400	424.00	169.60	L-13
		Electrician	day	0.200	593.00	118.60	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	6500.00	6500.00	M-170
		ii) Sodium vapour lamp 70 watt	each	1.000	2125.00	2125.00	M-168
		Add 1 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				86.25	
		c) Painting					
		Providing two coats of alluminium paint over steel circular hollow pipe	sqm	2.760	141.00	389.16	Item 8.9
		c) GST (multiplying factor 0.2016) on (a+b)				1816.51	

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Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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e) Overhead charges @ 10 % on (a+b+d) 1082.70

f) Contractor's profit @ 10 % on (a+b+d+e) 1190.97

g) Cess @ 1% on (a+b+d+e+f) 131.01

Rate per light = a+b+c+d+e+f+g 13620.82

say 13621.00

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) Item 12.7 (Addl) B)

b) Labour

Mate day 0.050 551.00 27.55 L-12

Mazdoor day 1.000 424.00 424.00 L-13

Mazdoor skilled day 0.250 508.00 127.00 L-15

c) Material

Reinforced Cement Concrete pipe 300 mm dia metre 20.000 490.00 9800.00 M-151

Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 20 m) cum 7.200 500.00 3600.00 M-009

Collar for joints 300 mm dia each 9.000 143.00 1287.00 M-083

Cement mortar 1:2 for joints (Excluding GST,OH,CP &Cess) cum 0.020 7105.00 142.10 Item 12.6 (B)

d) Machinery

Tractor-trolley hour 0.500 530.00 265.00 P&M-053

e) GST (multiplying factor 0.2016) on (b+c+d) 3159.61

f) Overhead charges @ 10 % on (b+c+d+e) 1883.23

g) Contractor's profit @ 10 % on (b+c+d+e+f) 2071.55

h) Cess @ 1% on (b+c+d+e+f+g) 227.87

Cost for 20 metre = a+b+c+d+e+f+g+h 36242.71

Rate per metre = (a+b+c+d+e+f+g+h)/20 1812.14

say 1812.00

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 5605.00 18888.85 Item 12.7 (Addl) B)

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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	551.00	27.55	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		Mazdoor skilled	day	0.250	508.00	127.00	L-15
		c) Material					
		Reinforced Cement Concrete pipe 300 mm dia	metre	40.000	490.00	19600.00	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	500.00	7200.00	M-009
		Collar for joints 300 mm dia	each	18.000	143.00	2574.00	M-083
		Cement mortar 1:2 for joints (Excluding GST,OH,CP &Cess)	cum	0.040	7105.00	284.20	Item 12.6 (B)
		d) Machinery					
		Tractor-trolley	hour	1.000	530.00	530.00	P&M-053
		e) GST (multiplying factor 0.2016) on (b+c+d)				6288.06	
		f) Overhead charges @ 10 % on (b+c+d+e)				3747.88	
		f) Overhead charges @ 10 % on (b+c+d+e)				4122.67	
		h) Cess @ 1% on (b+c+d+e+f+g)				453.49	
		Cost for 20 metre = a+b+c+d+e+f+g+h				64691.70	
		Rate per metre = (a+b+c+d+e+f+g+h)/20				3234.59	
					say	<u>3235.00</u>	
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	5605.00	24549.90	Item 12.7 (Addl) B)
		b) Labour					
		Mate	day	0.160	551.00	88.16	L-12
		Mazdoor	day	3.000	424.00	1272.00	L-13
		Mazdoor skilled	day	1.000	508.00	508.00	L-15
		c) Material					
		Reinforced Cement Concrete pipe 300 mm dia	metre	60.000	490.00	29400.00	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	500.00	10800.00	M-009
		Collar for joints 300 mm dia	each	27.000	143.00	3861.00	M-083
		Cement mortar 1:2 for joints (Excluding GST,OH,CP &Cess)	cum	0.060	7105.00	426.30	Item 12.6 (B)
		d) Machinery					
		Tractor-trolley	hour	1.500	530.00	795.00	P&M-053
		e) GST (multiplying factor 0.2016) on (b+c+d)				9505.53	
		f) Overhead charges @ 10 % on (b+c+d+e)				5665.60	
		g) Contractor's profit @ 10 % on (b+c+d+e+f)				6232.16	
		h) Cess @ 1% on (b+c+d+e+f+g)				685.54	
		Cost for 20 metre = a+b+c+d+e+f+g+h				93789.19	
		Rate per metre = (a+b+c+d+e+f+g+h)/20				4689.46	
					say	<u>4689.00</u>	

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

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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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	551.00	22.04	L-12
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Mazdoor	day	1.000	424.00	424.00	L-13
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b) Material

Aluminium studs 100 x 100 mm fitted with lense reflectors	each	50.000	567.00	28350.00	M-062
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Add 10 per cent of cost of material for fixing and installation	2835.00
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c) GST (multiplying factor 0.2016) on (a+b)	6376.82
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d) Overhead charges @ 10 % on (a+b+c)	3800.79
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e) Contractor's profit @ 10 % on (a+b+c+d)	4180.87
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f) Cess @ 1% on (a+b+c+d+e)	459.90
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Cost for 50 studs = a+b+c+d+e+f	46449.42
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Rate per studs = (a+b+c+d+e+f)/50	928.99
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say 929.00

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	551.00	11.02	L-12
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Mazdoor	day	0.500	424.00	212.00	L-13
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b) Material

Traffic cones with 150 mm reflective sleeve	each	68.000	1545.00	105060.00	M-186
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c) Machinery

Tractor-trolley	hour	0.100	530.00	53.00	P&M-053
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d) GST (multiplying factor 0.2016) on (a+b+c)	21235.74
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e) Overhead charges @ 10 % on (a+b+c+d)	12657.18
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f) Contractor's profit @ 10 % on (a+b+c+d+e)	13922.89
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g) Cess @ 1% on (a+b+c+d+e+f)	1531.52
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Cost for 68 Nos. = a+b+c+d+e+f+g	154683.35
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Rate per metre = (a+b+c+d+e+f+g)/68	2274.76
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say 2275.00

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

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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

Taking output = one steel portable
barricade

a) Labour

Mate	day	0.020	551.00	11.02	L-12
Mazdoor	day	0.250	424.00	106.00	L-13
Painter	day	0.500	593.00	296.50	L-18
Welder	day	0.250	593.00	148.25	L-02

b) Material

Angle iron 45 x 45 x 5 mm	kg	25.000	50.73	1268.25	M-179 /1000
MS sheet 300 mm wide, 2.5 m long and 2.6 mm thick	kg	15.000	50.73	760.95	M-179 /1000
Paint	litre	0.500	450.00	225.00	M-131

Add 2 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes
40.58

c) GST (multiplying factor 0.2016) on (a+b) 575.88

d) Overhead charges @ 10 % on (a+b+c) 343.24

e) Contractor's profit @ 10 % on (a+b+c+d) 377.57

f) Cess @ 1% on (a+b+c+d+e) 41.53

Rate per barricade = a+b+c+d+e+f 4194.77

say 4195.00

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 of 45°, complete as per IRC:SP:55-2001

Unit = each

Taking output = one barricade

a) Labour

Mate	day	0.050	551.00	27.55	L-12
Mazdoor	day	0.300	424.00	127.20	L-13
Painter	day	0.600	593.00	355.80	L-18
Welder	day	0.300	593.00	177.90	L-02

b) Material

Angle iron 50 x 50 x 5 mm, 2 m long, 2 Nos.	kg	15.000	50.73	760.95	M-179 /1000
MS sheet of 12 SWG, 3 Nos of 200 mm width and 4 m length	kg	50.000	50.73	2536.50	M-179 /1000
Paint	litre	1.000	450.00	450.00	M-131

Add 1 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes
65.95

c) GST (multiplying factor 0.2016) on (a+b) 907.57

d) Overhead charges @ 10 % on (a+b+c) 540.94

e) Contractor's profit @ 10 % on (a+b+c+d) 595.04

f) Cess @ 1% on (a+b+c+d+e) 65.45

Rate per barricade = a+b+c+d+e+f 6610.85

say 6611.00

8.44

B With wooden components

Construction of a permanent type barricade made of wooden components, 1.5 m high from road level, fitted with 3 horizontal planks 200 mm wide and 3.66 m long on 100 x 100mm wooden vertical post, painted with yellow and white strips, 150 mm in width at an angle of 45°, complete as per IRC:SP:55-2001

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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	551.00	27.55	L-12
		Mazdoor	day	0.300	424.00	127.20	L-13
		Painter	day	0.600	593.00	355.80	L-18
		Carpenter	day	0.600	593.00	355.80	L-04
		b) Material					
		Timber	cum	0.180	28685.00	5163.30	M-185
		Add 1 per cent of cost of timber for nuts & bolts, nails, etc.				51.63	
		c) GST (multiplying factor 0.2016) on (a+b)				1225.99	
		d) Overhead charges @ 10 % on (a+b+c)				730.73	
		e) Contractor's profit @ 10 % on (a+b+c+d)				803.80	
		f) Cess @ 1% on (a+b+c+d+e)				88.42	
		Rate per barricade = a+b+c+d+e+f				8930.22	
					say	8930.00	
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	551.00	132.24	L-12
		Mazdoor	day	3.000	424.00	1272.00	L-13
		Painter	day	1.000	593.00	593.00	L-18
		Mason	day	2.000	593.00	1186.00	L-11
		b) Material					
		Brick	each	1800.000	12.00	21600.00	M-079
		Cement	kg	22.000	9.10	200.20	M-081 /1000
		Sand	cum	0.090	650.00	58.50	M-005
		Paint	litre	1.250	450.00	562.50	M-131
		c) GST (multiplying factor 0.2016) on (a+b)				5161.86	
		d) Overhead charges @ 10 % on (a+b+c)				3076.63	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3384.29	
		f) Cess @ 1% on (a+b+c+d+e)				372.27	
		Rate per barricade = a+b+c+d+e+f				37599.49	
					say	37599.00	
8.45	suggestive	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	551.00	11.02	L-12
		Mazdoor	day	0.250	424.00	106.00	L-13
		Painter	day	0.250	593.00	148.25	L-18

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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	71.00	71.00	M-172
		Paint	litre	0.500	450.00	225.00	M-131
		c) GST (multiplying factor 0.2016) on (a+b)				113.15	
		d) Overhead charges @ 10 % on (a+b+c)				67.44	
		e) Contractor's profit @ 10 % on (a+b+c+d)				74.19	
		f) Cess @ 1% on (a+b+c+d+e)				8.16	
		Rate per drum delineator = a+b+c+d+e+f				824.21	
					say	824.00	
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	551.00	22.04	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) Material					
		Flag of red color cloth 600 x 600 mm	each	1.000	69.00	69.00	M-099
		Wooden staff for fastening of flag 25 mm dia, one m long	each	1.000	71.00	71.00	M-196
		c) GST (multiplying factor 0.2016) on (a+b)				118.15	
		d) Overhead charges @ 10 % on (a+b+c)				70.42	
		e) Contractor's profit @ 10 % on (a+b+c+d)				77.46	
		f) Cess @ 1% on (a+b+c+d+e)				8.52	
		Rate per flagman = a+b+c+d				860.59	
					say	861.00	
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	424.00	254.40	L-20
		Bhisti	Each	0.300	424.00	127.20	L-21
		b) Material					
		Cement	Tonne	0.380	9100.00	3458.00	M-081
		Fine Sand	Cu.m.	1.070	650.00	695.50	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	10.31	M-209
		Hire and running charges of mech mixer			LS	20.63	
					Cost of 1 Cu.m.	4566.04	
					Cost per Cu.m.	4566.04	
					Say	4566.00	
8.48	16.68	Providing and laying 60mm thick factory 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	420.00	4200.00	M-203

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Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
		Bedding layer - 50mm thick	cum	0.500	650.00	325.00	M-005
		Coarse sand = 10x0.050=0.50 cum					
		Fine sand	cum	0.150	650.00	97.50	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 (Based on actual observation)					
		c) Labour					
		Mason (1st Class)	day	0.500	593.00	296.50	L-11
		Mason (2nd Class)	day	0.500	551.00	275.50	L-10
		Beldar	day	1.000	424.00	424.00	L-20
		Coolie	day	0.500	424.00	212.00	L-21
		d) GST (multiplying factor 0.2016) on (a+b+c)				1175.43	
		e) Overhead charges @ 10 % on (a+b+c+d)				700.59	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				770.65	
		g) Cess @ 1% on (a+b+c+d+e+f)				84.77	
		Rate per 10 Sqm = (a+b+c+d+e+f+g)		Cost for 10.00 sqm		8561.94	
				Cost per Sqm.		856.19	
				Say		856.20	
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	1739.00	912.98	M-201
		(slab area upto 0.50 sqm)					
		Mason (1st Class)	day	0.560	593.00	332.08	L-11
		Beldar	day	0.050	424.00	21.20	L-20
		Coolie	day	0.050	424.00	21.20	L-21
		c) Other Costs					
		Base Cement mortar 1 : 4 (1 cement : 4 coarse sand) Rate as per item 8.47.	cum	0.012	4566.00	54.79	Item 8.47
		SH: Cement Mortars (Excluding GST,OH,CP &Cess)					
		Sundries			LS	48.40	M-209
		d) GST (multiplying factor 0.2016) on (a+b+c)				280.36	
		e) Overhead charges @ 10 % on (a+b+c+d)				167.10	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				183.81	
		g) Cess @ 1% on (a+b+c+d+e+f)				20.22	
		Rate per 0.50 sqm = (a+b+c+d+e+f+g)		Cost for 0.50 sqm		2042.14	
				Cost per sqm.		4084.28	
				Say		4084.30	

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TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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	1890.00	992.25	M-202
b) Labour							
		Mason (1st Class)	day	0.560	593.00	332.08	L-11
		Beldar	day	0.050	424.00	21.20	L-20
		Coolie	day	0.050	424.00	21.20	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	4566.00	54.79	Item 8.47
		Sundries			LS	48.40	M-209
		d) GST (multiplying factor 0.2016) on (a+b+c)				296.34	
		e) Overhead charges @ 10 % on (a+b+c+d)				176.63	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				194.29	
		g) Cess @ 1% on (a+b+c+d+e+f)				21.37	
		Rate per 0.50 sqm = (a+b+c+d+e+f+g)				2158.55	
					Cost for 0.50 sqm		
					Cost per Sqm.	4317.10	
					Say	4317.10	
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	1100.00	1100.00	M-204
		Cement	tonne	0.0033	9100.00	30.03	M-081
b) Labour							
		Mason (1st Class)	day	0.200	593.00	118.60	L-11
		Coolie	day	0.200	424.00	84.80	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	4566.00	109.58	Item 8.47
		Sundries			LS	101.17	M-209
		d) GST (multiplying factor 0.2016) on (a+b+c)				311.31	
		e) Overhead charges @ 10 % on (a+b+c+d)				185.55	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				204.10	

CHAPTER-8

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

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)				22.45	
		Rate per sqm = (a+b+c+d+e+f+g)			Cost per sqm	2267.59	
					Say	2267.60	
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 Engineer-in-Charge.					
		Detail of cost for 1 sqm.					
		a) Material					
		Vitrified tile 300x300 x9.8mm	sqm	1.000	559.50	559.50	M-205
		Cement	tonne	0.0033	9100.00	30.03	M-081
		b) Labour					
		Mason (1st Class)	day	0.200	593.00	118.60	L-11
		Coolie	day	0.200	424.00	84.80	L-21
		c) Other Costs					
		Base Cement mortar 1 : 4 (1 cement : 4 coarse sand) Rate as per item 8.47.	cum	0.024	4566.00	109.58	Item 8.47
		SH: Cement Mortars (Excluding GST,OH,CP &Cess)					
		Sundries			LS	91.16	M-209
		d) GST (multiplying factor 0.2016) on (a+b+c)				200.32	
		e) Overhead charges @ 10 % on (a+b+c+d)				119.40	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				131.34	
		g) Cess @ 1% on (a+b+c+d+e+f)				14.45	
		Rate per sqm = (a+b+c+d+e+f+g)			Cost per sqm	1459.18	
					Say	1459.20	
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	1050.00	1050.00	M-206
		Cement	tonne	0.0033	9100.00	30.03	M-081
		b) Labour					
		Mason (1st Class)	day	0.200	593.00	118.60	L-11
		Coolie	day	0.200	424.00	84.80	L-21
		c) Other Costs					
		Base Cement mortar 1 : 4 (1 cement : 4 coarse sand) Rate as per item 8.47.	cum	0.024	4566.00	109.58	Item 8.47
		SH: Cement Mortars (Excluding GST,OH,CP &Cess)					
		Sundries with Carrage			LS	84.01	M-209
		d) GST (multiplying factor 0.2016) on (a+b+c)				297.77	
		e) Overhead charges @ 10 % on (a+b+c+d)				177.48	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				195.23	
		g) Cess @ 1% on (a+b+c+d+e+f)				21.48	
					Cost per sqm	2168.98	
					Say	2169.00	

CHAPTER-8

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr No	Ref. to MoRTH / DSR Spec.	Description	Unit	Quantity	Rate in Rs	Cost in Rs	Remarks/ Input ref.
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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	472.50	4725.00	M-207
Fine sand	cum	0.500	650.00	325.00	M-006

b) Transport

Carriage of Fine Sand	cum	0.500	0.00	0.00	
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c) Labour

Mason (1st Class)	day	0.500	593.00	296.50	L-11
Mason (2nd Class)	day	0.500	551.00	275.50	L-10
Beldar	day	1.000	424.00	424.00	L-20
Coolie	day	0.500	424.00	212.00	L-21

c) Other Costs

Sundries			LS	68.75	M-209
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- d) GST (multiplying factor 0.2016) on (a+b+c)**

1275.47

- e) Overhead charges @ 10 % on (a+b+c+d)**

760.22

- f) Contractor's profit @ 10 % on (a+b+c+d+e)**

836.24

- g) Cess @ 1% on (a+b+c+d+e+f)**

91.99

Total	Details of cost for 10 sqm	9290.67
	Cost per sqm	929.07

Say 929.10

- (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
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Fine sand	cum	0.150	650.00	97.50	M-006
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Coarse sand	cum	0.500	650.00	325.00	M-005
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b) Transport

Carriage of Fine Sand	cum	0.150	0.00	0.00	
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Carriage of Coarse Sand	cum	0.500	0.00	0.00	
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c) Labour

Mason (1st Class)	day	0.500	593.00	296.50	L-11
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Mason (2nd Class)	day	0.500	551.00	275.50	L-10
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Beldar	day	1.000	424.00	424.00	L-20
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Coolie	day	0.500	424.00	212.00	L-21
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- d) GST (multiplying factor 0.2016) on (a+b+c)**

1276.23

- e) Overhead charges @ 10 % on (a+b+c+d)**

760.67

- f) Contractor's profit @ 10 % on (a+b+c+d+e)**

836.74

- g) Cess @ 1% on (a+b+c+d+e+f)**

92.04

Details of cost for 10 sqm	9296.18
Cost per sqm	929.62

Say 929.60

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	551.00	352.64	L-12
		Mason	day	1.000	593.00	593.00	L-11
		Mazdoor	day	15.000	424.00	6360.00	L-13
		b) Material					
		40mm Aggregate at site	cum	13.800	1900.00	26220.00	M-055
		Sand at site	cum	6.900	650.00	4485.00	M-005
		Cement at site	tonne	3.300	9100.00	30030.00	M-081
		Cost of water	KL	18.000	71.00	1278.00	M-189
		c) Machinery					
		Concrete mixer 0.4/ 0.28 cum	hour	6.000	291.00	1746.00	P&M-009
		Generator set 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Water tanker 6 KL capacity	hour	3.000	724.00	2172.00	P&M-060
		d) GST (multiplying factor 0.2016) on (a+b+c)				15376.56	
		e) Overhead charges @ 10 % on (a+b+c+d)				9164.92	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				10081.41	
		g) Cess @ 1% on (a+b+c+d+e+f)				1108.96	
		Cost for 15 cum = a+b+c+d+e+f+g				112004.49	
		Rate per cum = (a+b+c+d+e+f+g)/15				7466.97	
					say	7467.00	
		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	551.00	99.18	L-12
		Mason	day	0.500	593.00	296.50	L-11
		Mazdoor	day	4.000	424.00	1696.00	L-13
		b) Material					
		Sand at site	cum	0.070	650.00	45.50	M-005
		Cement at site	tonne	0.050	9100.00	455.00	M-081
		RCC pipe NP-2/prestressed concrete pipe including collar at site	metre	12.500	1800.00	22500.00	M-149
		Granular material passing 5.6 mm sieve for bedding	cum	4.500	500.00	2250.00	M-009
		c) GST (multiplying factor 0.2016) on (a+b)				5512.18	
		d) Overhead charges @ 10 % on (a+b+c)				3285.44	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3613.98	
		f) Cess @ 1% on (a+b+c+d+e)				397.54	
		Cost for 12.5 metres = a+b+c+d+e+f				40151.32	
		Rate per metre = (a+b+c+d+e+f)/12.5				3212.11	
					say	3212.00	

CHAPTER-9
PIPE CULVERTS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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Note 1. In case of cement cradle 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	551.00	154.28	L-12
Mason	day	1.000	593.00	593.00	L-11
Mazdoor	day	6.000	424.00	2544.00	L-13

b) Material

Sand at site	cum	0.090	650.00	58.50	M-005
Cement at site	tonne	0.070	9100.00	637.00	M-081
RCC pipe NP-2/prestressed concrete pipe including collar at site	metre	12.500	2210.00	27625.00	M-150
Granular material passing 5-6 mm sieve for class bedding	cum	5.000	500.00	2500.00	M-009

c) GST (multiplying factor 0.2016) on (a+b) 6876.93

d) Overhead charges @ 10 % on (a+b+c) 4098.87

e) Contractor's profit @ 10 % on (a+b+c+d) 4508.76

f) Cess @ 1% on (a+b+c+d+e) 495.96

Cost for 12.5 metres = a+b+c+d+e+f 50092.30

Rate per metre= (a+b+c+d+e+f)/12.5 4007.38

say 4007.00

Note 1. In case of cement cradle 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	551.00	198.36	L-12
Mason	day	1.000	593.00	593.00	L-11
Mazdoor	day	8.000	424.00	3392.00	L-13

b) Material

Sand at site	cum	0.140	650.00	91.00	M-005
Cement at site	tonne	0.100	9100.00	910.00	M-081

CHAPTER-9
PIPE CULVERTS

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	1800.00	45000.00	M-149
		Granular material passing 5.6 mm sieve for bedding	cum	12.500	500.00	6250.00	M-009
		c) GST (multiplying factor 0.2016) on (a+b)				11377.17	
		d) Overhead charges @ 10 % on (a+b+c)				6781.15	
		e) Contractor's profit @ 10 % on (a+b+c+d)				7459.27	
		f) Cess @ 1% on (a+b+c+d+e)				820.52	
		Cost for 12.5 metres = a+b+c+d+e+f				82872.47	
		Rate per metre = (a+b+c+d+e+f)/12.5				6629.80	
	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	<u>6630.00</u>	
		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	551.00	308.56	L-12
		Mason	day	2.000	593.00	1186.00	L-11
		Mazdoor	day	12.000	424.00	5088.00	L-13
		b) Material					
		Sand at site	cum	0.180	650.00	117.00	M-005
		Cement at site	tonne	0.140	9100.00	1274.00	M-081
		RCC pipe NP-2 /prestressed concrete pipe including collar at site	metre	25.000	2210.00	55250.00	M-150
		Granular material passing 5-6 mm sieve for class bedding	cum	13.750	500.00	6875.00	M-009
		c) GST (multiplying factor 0.2016) on (a+b)				14131.87	
		d) Overhead charges @ 10 % on (a+b+c)				8423.04	
		e) Contractor's profit @ 10 % on (a+b+c+d)				9265.35	
		f) Cess @ 1% on (a+b+c+d+e)				1019.19	
		Cost for 12.5 metres = a+b+c+d				102938.01	
		Rate per metre= (a+b+c+d)/12.5				8235.04	
	Note	1. In case of cement craddle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .			say	<u>8235.00</u>	
		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 prevention 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 miscellaneous items like turfing and arboriculture, painting and lettering on km stones, repair to signage, repair to footpath, street lighting, railing dividers, separators and under passes for pedestains 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

CHAPTER- 10
MAINTENANCE OF ROADS

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	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.130	2044.00	265.72	P&M-026
		Tipper (L is average lead in km for borrow earth)	tonne. km	12 x L	18.00	648.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of carriage towards loading and unloading charges.				64.80	
		Plate compactor	hour	0.500	382.00	191.00	P&M-086
		c) GST (multiplying factor 0.2016) on (a+b)				415.62	
		d) Overhead charges @ 10 % on (a+b+c)				247.72	
		e) Contractor's profit @ 10 % on (a+b+c+d)				272.49	
		f) Cess @ 1% on (a+b+c+d+e)				29.97	
		Cost for 10 cum = a+b+c+d+e+f				3027.40	
		Rate per cum = (a+b+c+d+e+f)/10				302.74	
					say	<u>303.00</u>	
		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	551.00	99.18	L-12
		Mazdoor	day	4.500	424.00	1908.00	L-13
		b) Machinery					
		Excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.250	2044.00	511.00	P&M-026
		Tipper (L is average lead in km for borrow earth)	tonne. km	24xL	18.00	1296.00	Lead =3 km & P&M-058
		Add 10 per cent of cost of transportation to cover cost of loading and unloading				129.60	
		Plate compactor @ 25 sqm per hour	hour	12.000	382.00	4584.00	P&M-086
		c) GST (multiplying factor 0.2016) on (a+b)				1719.20	
		d) Overhead charges @ 10 % on (a+b+c)				1024.70	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1127.17	
		f) Cess @ 1% on (a+b+c+d+e)				123.99	
		Cost for 100 sqm = a+b+c+d+e+f				12522.84	
		Rate per sqm = (a+b+c+d+e+f)/100				125.23	
					say	<u>125.00</u>	

CHAPTER- 10
MAINTENANCE OF ROADS

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	551.00	55.10	L-12
		Mazdoor	day	2.500	424.00	1060.00	L-13
		b) Machinery					
		Plate compactor @ 25 sqm per hour	hour	4.000	382.00	1528.00	P&M-086
		c) GST (multiplying factor 0.2016) on (a+b)					
							532.85
		d) Overhead charges @ 10 % on (a+b+c)					317.60
		e) Contractor's profit @ 10 % on (a+b+c+d)					349.36
		f) Cess @ 1% on (a+b+c+d+e)					38.43
		Cost for 100 sqm = a+b+c+d					3881.34
		Rate per sqm on = (a+b+c+d)100					38.81
							say 39.00
		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	551.00	2071.76	L-12
		Mazdoor	Day	90.000	424.00	38160.00	L-13
		Mazdoor skilled	Day	4.000	508.00	2032.00	L-15
		b) Machinery					
		Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
		HMP 100-110 TPH Capacity	hour	6.000	32730.00	196380.00	P&M-021
		Tipper 10 tonnes capacity	hour	45.000	916.00	41220.00	P&M-048
		Smooth wheeled roller 8-10 tonnes	hour	12.000	783.00	9396.00	P&M-044
		c) Material					
		Crushed stone aggregates nominal size 13.2mm	cum	184.500	1820.00	335790.00	M-052
		Crushed stone aggregates nominal size 11.2mm	cum	92.250	1800.00	166050.00	M-051
		Bitumen 80/100	tonne	14.970	57924.00	867122.28	M-075
		Bitumen emulsion for tack coat including vertical sides of pot hole.	tonne	2.460	55000.00	135300.00	M-077
		d) GST (multiplying factor 0.2016) on (a+b+c)					362369.96
		e) Overhead charges @ 10 % on (a+b+c+d)					215984.00
		f) Contractor's profit @ 10 % on (a+b+c+d+e)					237582.40
		g) Cess @ 1% on (a+b+c+d+e+f)					26134.06
		Cost for 10250 sqm = a+b+c+d+e					2639540.46
		Rate per sqm = (a+b+c+d+e)/10250					257.52
							say 258.00

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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	551.00	1608.92	L-12
		Mazdoor	Day	70.000	424.00	29680.00	L-13
		Mazdoor skilled	Day	3.000	508.00	1524.00	L-15
		b) Machinery					
		Air compressor 250 cfm	hour	6.000	658.00	3948.00	P&M-001
		HMP 100-110 TPH Capacity	hour	6.000	25480.00	152880.00	P&M-022
		Tipper 10 tonnes capacity	hour	45.000	916.00	41220.00	P&M-048
		Smooth wheeled roller 8-10 tonnes	hour	12.000	783.00	9396.00	P&M-044
		c) Material					
		i) Bitumen	tonne	22.500	57924.00	1303290.00	M-075
		ii) Bitumen emulsion for tack coat .	tonne	1.180	55000.00	64900.00	M-077
		iii) Aggregates					
		Grading I - 19mm(Nominal size)					
		20-10mm 35 per cent	cum	99.750	1860.00	185535.00	M-051,M-052,M-053 and M-054
		10-5 mm 23 per cent	cum	65.550	800.00	52440.00	M-025
		5mm and below40 per cent	cum	114.000	967.00	110238.00	M-021,M-022 and M-024
		Add 5 per cent for wastage				17410.65	
		or					
		Grading-II 13mm (Nominal size)					
		13.2-10 mm 30 per cent	cum	85.500	1810.00	154755.00	M-051 and M-052
		10-5 mm 25 per cent	cum	71.250	800.00	57000.00	M-025
		5 mm and Below43 per cent	cum	122.550	967.00	118505.85	M-021,M-022 and M-024
		Filler 2 per cent	tonne	9.000	15000.00	135000.00	M-188
		Add 5 per cent for wastage				23263.04	
		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 (multiplying factor 0.2016) on (a+b+c)				397972.63	
		e) Overhead charges @ 10 % on (a+b+c+d)				237204.32	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				260924.75	
		g) Cess @ 1% on (a+b+c+d+e+f)				28701.72	
		Cost for 4900 cum = a+b+c+d+e+f+g				2898873.99	
		Rate per cum = (a+b+c+d+e+f+g)/4900				591.61	
					say	592.00	
10.5		(ii) for grading II Material					
		d) GST (multiplying factor 0.2016) on (a+b+c)				422749.32	
		e) Overhead charges @ 10 % on (a+b+c+d)				251972.01	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				277169.21	
		g) Cess @ 1% on (a+b+c+d+e+f)				30488.61	
		Cost for 4900 cum = a+b+c+d+e+f+g				3079349.96	
		Rate per cum = (a+b+c+d+e+f+g)/4900				628.44	
					say	628.00	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
<p>Note For detailed working of quantities of aggregates, refer item 5.8 of chapter 5</p>							
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	551.00	22.04	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) Material					
		Slow-curing bitumen emulsion	Kg	33.000	55.00	1815.00	M-077
		Stone crusher dust	cum	0.020	700.00	14.00	M-021
		c) GST (multiplying factor 0.2016) on (a+b)				458.65	
		d) Overhead charges @ 10 % on (a+b+c)				273.37	
		e) Contractor's profit @ 10 % on (a+b+c+d)				300.71	
		f) Cess @ 1% on (a+b+c+d+e)				33.08	
		Cost for 500sqm = a+b+c+d+e+f				3340.85	
		Rate per meter = (a+b+c+d+e+f)/500				6.68	
					say	<u>7.00</u>	
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	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Material					
		Stone crusher dust finer than 3mm with not more than 10 per cent passing 0.075 sieve.	cum	6.250	700.00	4375.00	M-021
		c) GST (multiplying factor 0.2016) on (a+b)				1061.84	
		d) Overhead charges @ 10 % on (a+b+c)				632.89	
		e) Contractor's profit @ 10 % on (a+b+c+d)				696.18	
		f) Cess @ 1% on (a+b+c+d+e)				76.58	
		Cost for 3500sqm = a+b+c+d+e+f				7734.57	
		Rate per meter = (a+b+c+d+e+f)/3500				2.21	
					say	<u>2.21</u>	
10.8	(A) 3004.3.2 (B) 3004.3.4 (C) 3004.5 (D) 3004.6	Fog Seal					
		Crack Prevention courses.					
		Slurry Seal					
		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	551.00	22.04	L-12
		Mazdoor	day	0.500	424.00	212.00	L-13
		Chiseller	day	0.500	551.00	275.50	L-05

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Material					
		Epoxy primer	kg	2.500	281.00	702.50	M-097
		Epoxy compound with accessories for preparing epoxy mortar	kg	10.000	257.00	2570.00	M-095
		c) Machinery					
		Air compressor 250 cfm for cleaning	hour	0.050	658.00	32.90	P&M-001
		d) GST (multiplying factor 0.2016) on (a+b+c)				769.09	
		e) Overhead charges @ 10 % on (a+b+c+d)				458.40	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				504.24	
		g) Cess @ 1% on (a+b+c+d+e+f)				55.47	
		Cost for 10 metres = a+b+c+d+e+f+g				5602.14	
		Rate per metre = (a+b+c+d+e+f+g)/10				560.21	
					say	<u>560.00</u>	
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	551.00	22.04	L-12
		Mazdoor	day	0.500	424.00	212.00	L-13
		b) Material					
		Primer	kg	0.250	207.50	51.88	M-146
		Sealant	kg	1.000	340.00	340.00	M-120
		c) Machinery					
		Air compressor 250 cfm for cleaning	hour	0.050	658.00	32.90	P&M-001
		d) GST (multiplying factor 0.2016) on (a+b+c)				132.82	
		e) Overhead charges @ 10 % on (a+b+c+d)				79.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				87.08	
		g) Cess @ 1% on (a+b+c+d+e+f)				9.58	
		Cost for 10 metres = a+b+c+d+e+f+g				967.46	
		Rate per metre = (a+b+c+d+e+f+g)/10				96.75	
					say	<u>97.00</u>	
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	551.00	44.08	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) GST (multiplying factor 0.2016) on (a)				94.36	
		c) Overhead charges @ 10 % on				56.24	
		d) Contractor's profit @ 10 % on (a+b+c)				61.87	
		e) Cess @ 1% on (a+b+c+d)				6.81	
		Cost for 10 metres = a+b+c+d+e				687.36	
		Rate per metre = (a+b+c+d+e)/10				68.74	
					say	<u>69.00</u>	
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					

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

Taking output = 100 cum

a) Labour

Mate	day	0.040	551.00	22.04	L-12
Mazdoor	day	1.000	424.00	424.00	L-13

b) Machinery

Dozer 180 HP @ 60 cum per hour	hour	1.670	5045.00	8425.15	P&M-014
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c) GST (multiplying factor 0.2016) on (a+b)

1788.43

d) Overhead charges @ 10 % on (a+b+c)

1065.96

e) Contractor's profit @ 10 % on (a+b+c+d)

1172.56

f) Cess @ 1% on (a+b+c+d+e)

128.98

Cost for 100 cum = a+b+c+d+e+f

13027.12

Rate per cum = (a+b+c+d+e+f)/100

130.27

say

130.00

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 bulldozer 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	551.00	22.04	L-12
Mazdoor	day	1.000	424.00	424.00	L-13

b) Machinery

Dozer D 50 A-15	hour	1.670	3398.00	5674.66	P&M-014
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c) GST (multiplying factor 0.2016) on (a+b)

1233.93

d) Overhead charges @ 10 % on (a+b+c)

735.46

e) Contractor's profit @ 10 % on (a+b+c+d)

809.01

f) Cess @ 1% on (a+b+c+d+e)

88.99

Cost for 100 cum = a+b+c+d+e+f

8988.09

Rate per cum = (a+b+c+d+e+f)/100

89.88

say

90.00

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	551.00	49.59	L-12
Mazdoor	day	1.500	424.00	636.00	L-13
Driller	day	0.750	551.00	413.25	L-06
Blaster	day	0.070	551.00	38.57	L-03

b) Machinery

Dozer D 50 @ 60 cum per hour	hour	1.670	3398.00	5674.66	P&M-014
Air compressor 250 cfm with two jack hammer	hour	2.500	658.00	1645.00	P&M-001

c) Materials

Gelatine 80 per cent @ 35 kg per 100 cum	kg	17.500	166.00	2905.00	M-104
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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	11.59	811.30	M-094 /100
		d) GST (multiplying factor 0.2016) on (a+b+c)				2454.15	
		e) Overhead charges @ 10 % on (a+b+c+d)				1462.75	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1609.03	
		g) Cess @ 1% on (a+b+c+d+e+f)				176.99	
		Cost for 100 cum = a+b+c+d+e+f+g				17876.29	
		Rate per cum = (a+b+c+d+e+f+g)/100				178.76	
					say	<u>179.00</u>	
		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	551.00	44.08	L-12
		Mazdoor	day	2.000	424.00	848.00	L-13
		b) Machinery					
		Dozer D-50 @ 850 cum per hour	hour	5.880	3398.00	19980.24	P&M-014
		c) GST (multiplying factor 0.2016) on (a+b)				4207.86	
		d) Overhead charges @ 10 % on (a+b+c)				2508.02	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2758.82	
		f) Cess @ 1% on (a+b+c+d+e)				303.47	
		Cost for 5000 cum = a+b+c+d+e+f				30650.49	
		Rate per cum = (a+b+c+d+e+f)/5000				6.13	
					say	<u>6.00</u>	
		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	2541.00	35726.46	
		b) Add 50% for Extra efforts involved on maintenance to be done in small reaches				17863.23	
		Cost for 187.5 Sqm. = a+b				53589.69	
		Rate per Sqm = (a+b)/187.5				285.81	
					say	<u>286.00</u>	
		Note The cost of 25% retrived material may be deducted from rates.					

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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 Clause 1908.					
		<i>Unit = One No. Hume Pipe (1000 mm dia)</i>					
		<i>Taking output = One No. H. P. Culvert</i>					
		a) Labour					
		Mate	day	0.100	551.00	55.10	L-12
		Mazdoor (Unskilled)	day	1.000	424.00	424.00	L-13
		Mason 2nd Class	day	1.400	551.00	771.40	
		b) Material					
		Cement, Sand, Brick, Boulder etc.	L.S.			200.00	P&M-014
		c) GST (multiplying factor 0.2016) on (a+b)				292.42	
		d) Overhead charges @ 10 % on (a+b+c)				174.29	
		e) Contractor's profit @ 10 % on (a+b+c+d)				191.72	
		f) Cess @ 1% on (a+b+c+d+e)				21.09	
		Cost for one No., Hume Pipe Culvert = a+b+c+d+e+f				2130.02	
		Rate per Hume Pipe Culvert = (a+b+c+d+e+f)				2130.02	
					say	<u>2130.00</u>	
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 Clause 1908.					
		<i>Unit = One No. Culvert (2 m span)</i>					
		<i>Taking output = One No. Slab Culvert</i>					
		a) Labour					
		Mate	day	0.200	551.00	110.20	L-12
		Mazdoor (Unskilled)	day	4.000	424.00	1696.00	L-13
		Mason 2nd Class	day	1.000	551.00	551.00	
		b) Material					
		Cement, Sand, Brick, Boulder etc.	L.S.			500.00	P&M-014
		c) GST (multiplying factor 0.2016) on (a+b)				576.01	
		d) Overhead charges @ 10 % on (a+b+c)				343.32	
		e) Contractor's profit @ 10 % on (a+b+c+d)				377.65	
		f) Cess @ 1% on (a+b+c+d+e)				41.54	
		Cost for one No., Slab Culvert = a+b+c+d+e+f				4195.72	
		Rate per Slab Culvert = (a+b+c+d+e+f)				4195.72	
					say	<u>4196.00</u>	
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.					
		<i>Unit = One metre</i>					
		<i>Taking output = 50 metre causeway</i>					
		a) Labour					
		Mate	day	0.800	551.00	440.80	L-12
		Mazdoor (Unskilled)	day	1.600	424.00	678.40	L-13
		Mason 1st Class/Painter 1st Class	day	4.000	593.00	2372.00	
		b) Material					
		Cement, Sand, Brick, Boulder etc.	L.S.			350.00	P&M-014
		c) GST (multiplying factor 0.2016) on (a+b)				774.39	
		d) Overhead charges @ 10 % on				461.56	
		e) Contractor's profit @ 10 % on (a+b+c+d)				507.72	

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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)				55.85	
		Cost for 50 metre = a+b+c+d+e+f				5640.72	
		Rate per metre = (a+b+c+d+e+f)/50				112.81	
					say	<u>113.00</u>	
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	551.00	49.59	L-12
		Mazdoor (Unskilled)	day	2.000	424.00	848.00	L-13
		Painter 1st Class	day	0.125	593.00	74.13	
		b) Material					
		Cement, Sand, Brick, Boulder etc.	L.S.			270.00	
		c) GST (multiplying factor 0.2016) on (a+b)				250.33	
		d) Overhead charges @ 10 % on (a+b+c)				149.21	
		e) Contractor's profit @ 10 % on (a+b+c+d)				164.13	
		f) Cess @ 1% on (a+b+c+d+e)				18.05	
		Cost for one km = a+b+c+d+e+f				1823.44	
		Rate per km = (a+b+c+d+e+f)				1823.44	
					say	<u>1823.00</u>	
10.20	1900	Cutting of branches of trees shrubs and trimming of grass and weeds					
		(i) Cutting of branches of trees and shrubs from the road way or with in R.O.W. including disposal of wood and leaves to suitable location as per technical specification Clause 1914.					
		Unit = 1 tree					
		Taking output = 10 trees of 900 mm average girth					
		a) Labour					
		Mate	day	0.120	551.00	66.12	L-12
		Mazdoor (Skilled)	day	1.000	508.00	508.00	L-15
		Mazdoor (Unskilled)	day	2.000	424.00	848.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				286.70	
		d) Overhead charges @ 10 % on (a+b+c)				170.88	
		e) Contractor's profit @ 10 % on (a+b+c+d)				187.97	
		f) Cess @ 1% on (a+b+c+d+e)				20.68	
		Cost for 10 trees = a+b+c+d+e				2088.35	
		Rate per tree= (a+b+c)/10				208.84	
					say	<u>209.00</u>	
		(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	551.00	44.08	L-12
		Mazdoor (Unskilled)	day	2.000	424.00	848.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				179.84	
		c) Overhead charges @ 10 % on				107.19	
		d) Contractor's profit @ 10 % on (a+b+c)				117.91	
		e) Cess @ 1% on (a+b+c+d)				12.97	
		Cost for 100 shrubs = a+b+c+d+e				1309.99	
		Rate per shrub= (a+b+c+d+e)/100				13.10	
					say	<u>13.00</u>	

CHAPTER- 10
MAINTENANCE OF ROADS

Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
(iii) Trimming 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	551.00	220.40	L-12
		Mazdoor (Unskilled)	day	10.000	424.00	4240.00	L-13
c) GST (multiplying factor 0.2016) on (a+b)						899.22	
c) Overhead charges @ 10 % on						535.96	
d) Contractor's profit @ 10 % on (a+b+c)						589.56	
e) Cess @ 1% on (a+b+c+d)						64.85	
Cost for 1500 sqm = a+b+c+d+e						6549.99	
Rate per sqm = (a+b+c+d+e)/1500						4.37	
						say	4.00
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	551.00	5.51	L-12
		Mazdoor (Unskilled)	day	0.143	424.00	60.63	L-13
		Mazdoor (White washer)	day	0.143	424.00	60.63	L-13
b) Material							
		Lime	quintel	0.045	1500.00	67.50	
		Fevicol adhesive	kg	0.100	135.00	13.50	
		Indigo	kg	0.013	130.00	1.69	
c) GST (multiplying factor 0.2016) on (a+b)						42.23	
d) Overhead charges @ 10 % on (a+b+c)						25.17	
e) Contractor's profit @ 10 % on (a+b+c+d)						27.69	
f) Cess @ 1% on (a+b+c+d+e)						3.05	
Cost for 9 sqm = a+b+c+d						307.60	
Rate per sqm = (a+b+c+d)/9						34.18	
						say	34.00
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 Hydraulic 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	551.00	4.41	L-12
		Mazdoor	day	0.200	424.00	84.80	L-13
b) Machinery							
		Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	1.670	2044.00	3413.48	P&M-026
		Tipper 5.5 cum capacity,	hour	0.320	916.00	293.12	P&M-048
c) GST (multiplying factor 0.2016) on (a+b)						765.24	
d) Overhead charges @ 10 % on (a+b+c)						456.11	
e) Contractor's profit @ 10 % on (a+b+c+d)						501.72	
f) Cess @ 1% on (a+b+c+d+e)						55.19	
Cost for 100 cum = a+b+c+d+e+f						5574.07	
Rate per cum = (a+b+c+d+e+f)/100						55.74	
						say	56.00

CHAPTER- 10
MAINTENANCE OF ROADS

Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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10.23

Snow Clearance on Roads with Backhoe-loader

- (i) Snow clearance from road surface by a Backhoe-loader and disposing it on the valley side

Unit = cum

Taking output = 5000 cum

a) Labour

Mate	day	0.200	551.00	110.20	L-12
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Mazdoor	day	5.000	424.00	2120.00	L-13
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b) Machinery

Backhoe-loader	hour	10.200	2200.00	22440.00	P&M-098
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c) GST (multiplying factor 0.2016) on (a+b) 4973.51

d) Overhead charges @ 10 % on (a+b+c) 2964.37

e) Contractor's profit @ 10 % on (a+b+c+d) 3260.81

f) Cess @ 1% on (a+b+c+d+e) 358.69

Cost for 100 cum = a+b+c+d+e+f 36227.58

Rate per cum = (a+b+c+d+e+f)/5000 7.25

say 7.00

Note i) Labour provided will not be cutting the snow. They will be guiding the Backhoe-loader operator on the alignment of the road as entire surface gets covered with snow and the edges of the road are not visible. Also they will keep a watch on the hill side for any eventuality of avalanches, slide etc.

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 miscellaneous 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)					
		<i>Unit = cum</i>					
		<i>Taking output = 15 cum</i>					
		a) Labour					
		Mate	day	0.040	551.00	22.04	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) GST (multiplying factor 0.2016) on (a)				89.92	
		c) Overhead charges @ 10 % on (a+b)				53.60	
		d) Contractor's profit @ 10 % on (a+b+c)				58.96	
		e) Cess @ 1% on (a+b+c+d)				6.49	
		Cost for 15 cum= a+b+c+d+e				655.01	
		Rate per cum = (a+b+c+d+e)/15				43.67	
					say	<u>44.00</u>	
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					
		<i>Unit = sqm</i>					
		<i>Taking output = 100 sqm</i>					
		(i) In rows 15 cm apart in either direction					
		a) Labour					
		Mate	day	0.170	551.00	93.67	L-12
		Mazdoor for grassing	day	0.750	424.00	318.00	L-13
		Mazdoor for maintenance for 30 days	day	1.000	424.00	424.00	L-13
		b) Machinery					
		Water tanker6 KL capacity	hour	0.500	724.00	362.00	P&M-060
		c) Material					
		Doob grass	kg	100.000	18.00	1800.00	M-112
		d) GST (multiplying factor 0.2016) on (a+b+c)				604.33	
		e) Overhead charges @ 10 % on (a+b+c+d)				360.20	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				396.22	
		g) Cess @ 1% on (a+b+c+d+e+f)				43.58	
		Cost for 100 sqm = a+b+c+d+e+f+g				4402.00	
		Rate per sqm= (a+b+c+d+e+f+g)/100				44.02	
					say	<u>44.00</u>	
11.2		(ii) In rows 7.5 cm apart in either direction					
		a) Labour					
		Mate	day	0.220	551.00	121.22	L-12
		Mazdoor for grassing.	day	1.250	424.00	530.00	L-13
		for maintenance for 30 days	day	1.000	424.00	424.00	L-13
		b) Machinery					
		Water tanker6 KL capacity	hour	0.750	724.00	543.00	P&M-060
		c) Material					
		Doob grass	kg	200.000	18.00	3600.00	M-112
		d) GST (multiplying factor 0.2016) on (a+b+c)				1051.99	
		e) Overhead charges @ 10 % on (a+b+c+d)				627.02	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				689.72	
		g) Cess @ 1% on (a+b+c+d+e+f)				75.87	
		Cost for 100 sqm = a+b+c+d+e+f+g				7662.82	
		Rate per sqm = (a+b+c+d+e+f+g)/100				76.63	
					say	<u>77.00</u>	

**CHAPTER-11
HORTICULTURE**

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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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	551.00	82.65	L-12
Mazdoor for preparation of ground	day	0.500	424.00	212.00	L-13
Mali for fetching doobs grass roots and grassing at 15 cm apart	day	1.000	551.00	551.00	L-09

b) Machinery

Water tanker 6 KL capacity	hour	0.500	724.00	362.00	P&M-060
Tractor with tiller	hour	0.010	530.00	5.30	P&M-053

c) Material

Supply of farm yard manure at site of work	cum	0.180	141.00	25.38	M-167
Fine grass	kg	100.000	18.00	1800.00	M-113

d) GST (multiplying factor 0.2016) on (a+b+c)

612.53

e) Overhead charges @ 10 % on (a+b+c+d)

365.09

f) Contractor's profit @ 10 % on (a+b+c+d+e)

401.60

g) Cess @ 1% on (a+b+c+d+e+f)

44.18

Cost for 100 sqm = a+b+c+d+e+f+g

4461.73

Rate per sqm = (a+b+c+d+e+f+g)/100

44.62

say 45.00

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	551.00	5510.00	L-09
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b) Machinery

Water tanker 6 KL capacity	hour	15.000	724.00	10860.00	P&M-060
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c) Material

Cost of water	KL	90.000	71.00	6390.00	M-189
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d) GST (multiplying factor 0.2016) on (a+b+c)

4588.42

e) Overhead charges @ 10 % on (a+b+c+d)

2734.84

f) Contractor's profit @ 10 % on (a+b+c+d+e)

3008.33

g) Cess @ 1% on (a+b+c+d+e+f)

330.92

Cost for 100 sqm = a+b+c+d+e+f+g

33422.51

Rate per sqm = (a+b+c+d+e+f+g)/100

334.23

say 334.00

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 of 0.6 cum per 100 sqm

Unit = sqm

Taking output = 100 sqm

a) Labour

Mate	day	0.250	551.00	137.75	L-12
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**CHAPTER-11
HORTICULTURE**

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	424.00	424.00	L-13
		Mali for fetching doobs grass roots	day	1.500	551.00	826.50	L-09
		hedges and grassing at 10 cm apart					
		b) Machinery					
		Water tanker6 KL capacity	hour	0.500	724.00	362.00	P&M-060
		Tractor with tiller	hour	0.010	530.00	5.30	P&M-053
		c) Material					
		Supply of farm yard manure at site of work @ 0.6 cum per 100 sqm	cum	0.600	141.00	84.60	M-167
		Fine grass	kg	100.000	18.00	1800.00	M-113
		d) GST (multiplying factor 0.2016) on (a+b+c)				733.85	
		e) Overhead charges @ 10 % on (a+b+c+d)				437.40	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				481.14	
		g) Cess @ 1% on (a+b+c+d+e+f)				52.93	
		Cost for 100 sqm = a+b+c+d+e+f+g				5345.47	
		Rate per sqm = (a+b+c+d+e+f+g)/100				53.45	
					say	53.00	
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	551.00	5510.00	L-09
		b) Machinery					
		Water tanker6 KL capacity	hour	20.000	724.00	14480.00	P&M-060
		c) Material					
		Cost of water	KL	60.000	71.00	4260.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				4888.80	
		e) Overhead charges @ 10 % on (a+b+c+d)				2913.88	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				3205.27	
		g) Cess @ 1% on (a+b+c+d+e+f)				352.58	
		Cost for 100 sqm = a+b+c+d+e+f+g				35610.53	
		Rate per sqm = (a+b+c+d+e+f+g)/100				356.11	
					say	356.00	
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	551.00	771.40	L-12
		Mazdoor for digging of trench 60 cm wide and 45 cm deep	day	10.000	424.00	4240.00	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	424.00	1696.00	L-13
		b) Machinery					
		Water tanker6 KL capacity	hour	0.500	724.00	362.00	P&M-060
		c) Material					
		Cost of hedge plants 2 rows at 30 cm apart	each	2x340	13.00	8840.00	M-116
		Supply of farm yard manure at site of work	cum	4.670	141.00	658.47	M-167

**CHAPTER-11
HORTICULTURE**

Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Pesticide	kg	0.250	361.00	90.25	M-136
		Cost of water	KL	3.000	71.00	213.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				3401.22	
		e) Overhead charges @ 10 % on (a+b+c+d)				2027.23	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				2229.96	
		g) Cess @ 1% on (a+b+c+d+e+f)				245.30	
		Cost for 100 metres = a+b+c+d+e+f+g				24774.83	
		Rate per metre = a+b+c+d+e+f+g)/100				247.75	
					say	<u>248.00</u>	
		(b) Maintenance of hedge for one year					
		<i>Unit = Running metre</i>					
		<i>Taking output = 100 m</i>					
		a) Labour					
		Mate	day	3.000	551.00	1653.00	L-12
		Mazdoor	day	30.000	424.00	12720.00	L-13
		b) Machinery					
		Water tanker 6 KL capacity	hour	5.000	724.00	3620.00	P&M-060
		c) Material					
		Manure sludge/Farm yard manure	cum	2.000	141.00	282.00	M-167
		Pesticide	kg	0.500	361.00	180.50	M-136
		Cost of water	KL	30.000	71.00	2130.00	M-189
		Cost of hedge plants @ 10 per cent casualty	each	68.000	13.00	884.00	M-116
		d) GST (multiplying factor 0.2016) on (a+b+c)				4328.25	
		e) Overhead charges @ 10 % on (a+b+c+d)				2579.78	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				2837.75	
		g) Cess @ 1% on (a+b+c+d+e+f)				312.15	
		Cost for 100 metres = a+b+c+d+e+f+g				31527.43	
		Rate per metre = a+b+c+d+e+f+g)/100				315.27	
					say	<u>315.00</u>	
11.8	307	Planting and Maintaining of Flowering Plants and Shrubs					
		(a) Planting flowering plants and shrubs in central verge					
		<i>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.</i>					
		<i>Taking output = 1000 metres</i>					
		a) Labour					
		Mate	day	1.200	551.00	661.20	L-12
		Mazdoor	day	12.000	424.00	5088.00	L-13
		b) Machinery					
		Water tanker 6 KL capacity	hour	6.000	724.00	4344.00	P&M-060
		c) Material					
		Plants	each	200.000	50.00	10000.00	M-100
		Shrubs	each	800.000	25.00	20000.00	M-166
		Manure sludge/Farm yard manure	cum	63.640	141.00	8973.24	M-167
		Pesticide	kg	0.500	361.00	180.50	M-136
		Cost of water	KL	36.000	71.00	2556.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				10443.47	
		e) Overhead charges @ 10 % on (a+b+c+d)				6224.64	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				6847.11	
		g) Cess @ 1% on (a+b+c+d+e+f)				753.18	
		Rate per Km = (a+b+c+d+e+f+g)/1000				76071.34	
					say	<u>76071.00</u>	
11.8		(b) Maintenance of flowering plants and shrubs in central verge for one year					
		<i>Unit = km</i>					
		<i>Taking output = one km</i>					

**CHAPTER-11
HORTICULTURE**

Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Labour					
		Mate	day	36.000	551.00	19836.00	L-12
		Mazdoor	day	365.000	424.00	154760.00	L-13
		b) Machinery					
		Water tanker 6 KL capacity	hour	90.000	724.00	65160.00	P&M-060
		c) Material					
		Manure Sludge / farm yard manure at site	cum	10.000	141.00	1410.00	M-167
		Cost of water	KL	180.000	71.00	12780.00	M-189
		Replacement of casualties @ 10 per cent					
		Plants	each	20.000	50.00	1000.00	M-100
		Shrubs	each	80.000	25.00	2000.00	M-166
		Pesticides	kg	1.500	361.00	541.50	M-136
		d) GST (multiplying factor 0.2016) on (a+b+c)				51909.48	
		e) Overhead charges @ 10 % on (a+b+c+d)				30939.70	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				34033.67	
		g) Cess @ 1% on (a+b+c+d+e+f)				3743.70	
		Rate per Km for one year = (a+b+c+d+e+f+g)				378114.05	
						say 378114.00	
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	551.00	936.70	L-12
		Mazdoor for planting	day	2.000	424.00	848.00	L-13
		Mazdoor for maintenance for one year	day	15.000	424.00	6360.00	L-13
		b) Machinery					
		Water tanker 6 KL capacity	hour	30.000	724.00	21720.00	P&M-060
		c) Material					
		Sapling 2 m high 25 mm dia	each	10.000	103.00	1030.00	M-160
		Farm yard manure	cum	0.940	141.00	132.54	M-167
		Pesticide	kg	0.500	361.00	180.50	M-136
		Cost of water	KL	12.000	71.00	852.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				6463.24	
		e) Overhead charges @ 10 % on (a+b+c+d)				3852.30	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				4237.53	
		g) Cess @ 1% on (a+b+c+d+e+f)				466.13	
		Cost for 10 trees = a+b+c+d+e+f+g				47078.94	
		Rate per trees = (a+b+c+d+e+f+g)/10				4707.89	
						say 4708.00	
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	551.00	66.12	L-12
		Mazdoor	day	3.000	424.00	1272.00	L-13

**CHAPTER-11
HORTICULTURE**

Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Machinery					
		Water tanker 6 KL capacity	hour	0.500	724.00	362.00	P&M-060
		c) Material					
		Cost of water	KL	3.000	71.00	213.00	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)				385.68	
		e) Overhead charges @ 10 % on (a+b+c+d)				229.88	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				252.87	
		g) Cess @ 1% on (a+b+c+d+e+f)				27.82	
		Cost for 100 sqm = a+b+c+d+e+f+g				2809.37	
		Rate per sqm = (a+b+c+d+e+f+g)				28.09	
					say	<u>28.00</u>	
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	141.00	141.00	M-167
		b) GST (multiplying factor 0.2016) on (a)				28.43	
		c) Overhead charges @ 10 % on (a+b)				16.94	
		d) Contractor's profit @ 10 % on (a+b+c)				18.64	
		e) Cess @ 1% on (a+b+c+d)				2.05	
		Rate per cum = (a+b+c)				207.06	
						<u>207.00</u>	
11.14	New	Half Brick Circular Tree Guard, in 2nd Class Brick, internal diameter 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 diameter 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	551.00	27.55	L-12
		Mason	day	0.250	593.00	148.25	L-11
		Mazdoor	day	0.250	424.00	106.00	L-13
		b) Material					
		Brick 2nd class including carriage	each	230.000	12.00	2760.00	M-079
		Cement mortar 1:6 (Excluding GST, OH, CP & Cess)	cum	0.030	3823.00	114.69	Item 12.6 (D)
		c) GST (multiplying factor 0.2016) on (a+b)				636.35	
		d) Overhead charges @ 10 % on (a+b+c)				379.28	
		e) Contractor's profit @ 10 % on (a+b+c+d)				417.21	
		f) Cess @ 1% on (a+b+c+d+e)				45.89	
		Rate per tree guard = a+b+c+d+e+f				4635.22	
					say	<u>4635.00</u>	
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					

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HORTICULTURE**

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a)	Labour					
			Mate	day	0.002	551.00	1.10	L-12
			Mason	day	0.050	593.00	29.65	L-11
			Mazdoor	day	0.050	424.00	21.20	L-13
		b)	Material					
			Brick 2nd class including carriage	each	50.000	12.00	600.00	M-079
		c)	GST (multiplying factor 0.2016) on (a+b)				131.43	
		d)	Overhead charges @ 10 % on (a+b+c)				78.34	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				86.17	
		f)	Cess @ 1% on (a+b+c+d+e)				9.48	
			Cost for 10 metre = a+b+c+d+e+f				957.37	
			Rate per metre = (a+b+c+d+e+f)/10				95.74	
						say	<u>96.00</u>	
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	551.00	11.02	L-12
			Blacksmith	day	0.150	593.00	88.95	L-02
			Mazdoor	day	0.070	424.00	29.68	L-13
		b)	Material					
			Empty bitumen drum	each	1.000	71.00	71.00	M-172
			MS sheet 50 x 0.5 mm	kg	0.650	50.73	32.97	M-179 /1000
			Rivets 6 mm dia and 10 mm in length	each	22.000	1.00	22.00	M-158
		c)	GST (multiplying factor 0.2016) on (a+b)				51.53	
		d)	Overhead charges @ 10 % on (a+b+c)				30.72	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				33.79	
		f)	Cess @ 1% on (a+b+c+d+e)				3.72	
			Rate for each tree guard = a+b+c+d+e+f				375.38	
						say	<u>375.00</u>	
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	551.00	22.04	L-12
			Blacksmith	day	0.200	593.00	118.60	L-02
			Mazdoor		0.200	424.00	84.80	L-13
		b)	Material					
			Empty bitumen drum	each	1.500	71.00	106.50	M-172
			MS sheet 50 x 0.5 mm	kg	0.650	50.73	32.97	M-179 /1000
			Rivets 6 mm dia and 10 mm in length	each	50.000	1.00	50.00	M-158
			MS plate 30 x 3 mm	kg	1.300	50.73	65.95	M-179 /1000

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HORTICULTURE**

Sr No	Ref. to MORTH/DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) GST (multiplying factor 0.2016) on (a+b)				96.94	
		d) Overhead charges @ 10 % on (a+b+c)				57.78	
		e) Contractor's profit @ 10 % on (a+b+c+d)				63.56	
		f) Cess @ 1% on (a+b+c+d+e)				6.99	
		Rate for each tree guard = a+b+c+d+e+f				706.13	
					say	706.00	
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	551.00	247.95	L-12
		Blacksmith/ welder for cutting to design and shape and jointing	day	2.000	593.00	1186.00	L-02
		Mazdoor for fixing and helper for Blacksmith/welder	day	2.500	424.00	1060.00	L-13
	b)	Material					
		Angle, tees, channels etc	quintal	1.050	5072.80	5326.44	M-179 /10
		Deduct the cost of scrap	quintal	0.050	(1690.93)	(84.55)	M-179/10/3
		Add 5 per cent of cost of material for welding rods and other welding accessories				262.09	
		c) GST (multiplying factor 0.2016) on (a+b)				1612.38	
		d) Overhead charges @ 10 % on (a+b+c)				961.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1057.13	
		f) Cess @ 1% on (a+b+c+d+e)				116.28	
		Rate per quintal = a+b+c+d				11744.75	
					say	11745.00	
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	551.00	27.55	L-12
		Blacksmith	day	0.250	593.00	148.25	L-02
		Mazdoor	day	0.250	424.00	106.00	L-13
	b)	Material					
		MS iron 25 x 6 mm	kg	19.200	50.73	974.02	M-179 /1000
		MS iron 25 x 3 mm	kg	9.600	50.73	487.01	M-179 /1000
		Add 5 per cent of cost of material for riveting, bolting and welding accessories					
	c)	Machinery					
		Tractor-trolley	hour	0.040	530.00	21.20	P&M-053
	d)	Painting					
		Painting two coats including priming	sqm	1.770	141.00	249.57	Item 8.9

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HORTICULTURE**

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			e) GST (multiplying factor 0.2016) on (a+b+c)				355.63	
			f) Overhead charges @ 10 % on (a+b+c+e)				211.97	
			g) Contractor's profit @ 10 % on (a+b+c+e+f)				233.16	
			h) Cess @ 1% on (a+b+c+e+f+g)				25.65	
			Rate per tree guard =a+b+c+d+e+f+g+h				2840.01	
						say	2840.00	
		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 wire 3 mm dia welded and fabricated as per design in two halves bolted together					
			Unit = Each					
			Taking output = one					
		a)	Labour					
			Mate	day	0.050	551.00	27.55	L-12
			Blacksmith	day	0.250	593.00	148.25	L-02
			Welder	day	0.250	593.00	148.25	L-02
			Mazdoor	day	0.250	424.00	106.00	L-13
		b)	Material					
			MS angle 30 x 30 x 3 mm	kg	13.500	50.73	684.86	M-179 /1000
			MS iron 25 x 3 mm	kg	18.000	50.73	913.14	M-179 /1000
			Steel wire 3 mm dia	kg	6.000	170.00	1020.00	M-192
			Add 5 per cent of cost of material for riveting, bolting and welding accessories				130.90	
		c)	Machinery					
			Tractor-trolley	hour	0.040	530.00	21.20	P&M-053
		d)	Painting					
			Painting two coats including priming	sqm	1.500	141.00	211.50	Item 8.9
			e) GST (multiplying factor 0.2016) on (a+b+c)				645.15	
			f) Overhead charges @ 10 % on (a+b+c+e)				384.53	
			g) Contractor's profit @ 10 % on (a+b+c+e+f)				422.98	
			h) Cess @ 1% on (a+b+c+e+f+g)				46.53	
			Rate per tree guard = a+b+c+d+e+f+g+h				4910.84	
						say	4911.00	
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	551.00	1377.50	L-12
			Mazdoor	day	25.000	424.00	10600.00	L-13
		ii)	For Maintenance for one year					
			Mate	day	5.000	551.00	2755.00	L-12
			Mazdoor	day	50.000	424.00	21200.00	L-13

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HORTICULTURE**

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	3398.00	33980.00	P&M-015
			Water tanker6 KL capacity (for planting)	hour	3.000	724.00	2172.00	P&M-060
			Water tanker6 KL capacity (for maintenance)	hour	25.000	724.00	18100.00	P&M-060
		c)	Material					
			Sapling 1 to 1.5 m high 2 cm dia stem	each	290.000	82.40	23896.00	M-160 x 0.8
			Add 10 per cent of sapling	each	29.000	82.40	2389.60	M-160 x 0.8
			Decayed farm yard/sludge manure (planting)	cum	60.900	141.00	8586.90	M-167
			Decayed farm yard/sludge manure (maintenance)	cum	4.000	141.00	564.00	M-167
			Pesticides for planting	kg	0.500	361.00	180.50	M-136
			Pesticides for maintenance	kg	1.500	361.00	541.50	M-136
			Cost of water	KL	18.000	71.00	1278.00	M-189
		d)	GST (multiplying factor 0.2016) on (a+b+c)				25728.39	
		e)	Overhead charges @ 10 % on (a+b+c+d)				15334.94	
		f)	Contractor's profit @ 10 % on (a+b+c+d+e)				16868.43	
		g)	Cess @ 1% on (a+b+c+d+e+f)				1855.53	
			Rate per hectare = a+b+c+d+e				187408.29	
						say	<u>187408.00</u>	

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 diameter 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 cavities.
- 20 Necessary safety precautions shall be taken for excavation on open foundations 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 foundations in rock, the trenches around the footing shall be filled-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 diameter 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.

CHAPTER-12
FOUNDATIONS

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 <i>Unit = cum</i> <i>Taking output = 10 cum</i>					
		A Manual Means					
		(i) Depth upto 3 m					
		a) Labour					
		Mate day	0.140	551.00	77.14		L-12
		Mazdoor day	3.500	424.00	1484.00		L-13
		b) GST (multiplying factor 0.2016) on (a)				314.73	
		c) Overhead charges @ 20 % on (a+b)				375.17	
		d) Contractor's profit @ 10 % on (a+b)				225.10	
		e) Cess @ 1% on (a+b+c+d)				24.76	
		Cost for 10 cum = a+b+c+d+e				2500.90	
		Rate per cum = (a+b+c+d+e)/10				250.09	
					<i>say</i>	250.00	
		(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 <i>Unit = cum</i> <i>Taking output = 10 cum</i>					
		A Manual Means					
		(i) Depth upto 3 m					
		a) Labour					
		Mate day	0.150	551.00	82.65		L-12
		Mazdoor day	3.850	424.00	1632.40		L-13
		b) GST (multiplying factor 0.2016) on (a)				345.75	
		c) Overhead charges @ 20 % on (a+b)				412.16	
		d) Contractor's profit @ 10 % on (a+b)				247.30	
		e) Cess @ 1% on (a+b+c+d)				27.20	
		Cost for 10 cum = a+b+c+d+e				2747.46	
		Rate per cum = (a+b+c+d+e)/10				274.75	
					<i>say</i>	275.00	
12.1 (I) A		(ii) Depth 3 m to 6 m (without de-watering)					
		a) Labour					
		Mate/Supervisor day	0.180	551.00	99.18		L-12
		Mazdoor day	4.500	424.00	1908.00		L-13
		b) GST (multiplying factor 0.2016) on (a)				404.65	
		c) Overhead charges @ 20 % on (a+b)				482.37	
		d) Contractor's profit @ 10 % on (a+b)				289.42	
		e) Cess @ 1% on (a+b+c+d)				31.84	
		Cost for 10 cum = a+b+c+d+e				3215.46	
		Rate per cum = (a+b+c+d+e)/10				321.55	
					<i>say</i>	322.00	
		(ii) b Depth 3 m to 6 m (with de-watering)					
		a) Labour					
		Mate/Supervisor day	0.210	551.00	115.71		L-12
		Mazdoor day	5.180	424.00	2196.32		L-13
		b) GST (multiplying factor 0.2016) on (a)				466.11	
		c) Overhead charges @ 20 % on (a+b)				555.63	
		d) Contractor's profit @ 10 % on (a+b)				333.38	
		e) Cess @ 1% on (a+b+c+d)				36.67	

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FOUNDATIONS

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				3703.82	
			Rate per cum = (a+b+c+d+e)/10				370.38	
						say	<u>370.00</u>	
12.1 (I) A		(iii)	Depth above 6 m (without de-watering)					
		a)	Labour					
			Mate/Supervisor	day	0.240	551.00	132.24	L-12
			Mazdoor	day	6.000	424.00	2544.00	L-13
		b)	GST (multiplying factor 0.2016) on (a)				539.53	
		c)	Overhead charges @ 20 % on (a+b)				643.15	
		d)	Contractor's profit @ 10 % on (a+b)				385.89	
		e)	Cess @ 1% on (a+b+c+d)				42.45	
			Cost for 10 cum = a+b+c+d+e				4287.26	
			Rate per cum = (a+b+c+d+e)/10				428.73	
						say	<u>429.00</u>	
		(iii) b	Depth above 6 m (with de-watering)					
		a)	Labour					
			Mate/Supervisor	day	0.290	551.00	159.79	L-12
			Mazdoor	day	7.200	424.00	3052.80	L-13
		b)	GST (multiplying factor 0.2016) on (a)				647.66	
		c)	Overhead charges @ 20 % on (a+b)				772.05	
		d)	Contractor's profit @ 10 % on (a+b)				463.23	
		e)	Cess @ 1% on (a+b+c+d)				50.96	
			Cost for 10 cum = a+b+c+d+e				5146.49	
			Rate per cum = (a+b+c+d+e)/10				514.65	
						say	<u>515.00</u>	
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	551.00	176.32	L-12
			Mazdoor	day	8.000	424.00	3392.00	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	2044.00	12264.00	P&M-026
		c)	GST (multiplying factor 0.2016) on (a+b)				3191.80	
		d)	Overhead charges @ 20 % on (a+b+c)				3804.82	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				2282.89	
		f)	Cess @ 1% on (a+b+c+d+e)				251.12	
			Cost for 240 cum = a+b+c+d+e+f				25362.95	
			Rate per cum = (a+b+c+d+e+f)/240				105.68	
						say	<u>106.00</u>	
		(i) c	Depth upto 3 m (with de-watering)					
			Unit = cum					
			Taking output = 240 cum					
		a)	Labour					
			Mate	day	0.336	551.00	185.14	L-12
			Mazdoor	day	8.400	424.00	3561.60	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.300	2044.00	12877.20	P&M-026
		c)	GST (multiplying factor 0.2016) on (a+b)				3351.39	
		d)	Overhead charges @ 20 % on (a+b+c)				3995.07	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				2397.04	
		f)	Cess @ 1% on (a+b+c+d+e)				263.67	
			Cost for 240 cum = a+b+c+d+e+f				26631.11	
			Rate per cum = (a+b+c+d+e+f)/240				110.96	
						say	<u>111.00</u>	

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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)					
		<i>Unit = cum</i>					
		<i>Taking output = 210 cum</i>					
		a) Labour					
		Mate	day	0.320	551.00	176.32	L-12
		Mazdoor	day	8.000	424.00	3392.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	2044.00	12264.00	P&M-026
		c) GST (multiplying factor 0.2016) on (a+b)				3191.80	
		d) Overhead charges @ 20 % on (a+b+c)				3804.82	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2282.89	
		f) Cess @ 1% on (a+b+c+d+e)				251.12	
		Cost for 210 cum = a+b+c+d+e+f				25362.95	
		Rate per cum = (a+b+c+d+e+f)/210				120.78	
					say	<u>121.00</u>	
		(ii) c Depth 3 m to 6 m (with de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 210 cum</i>					
		a) Labour					
		Mate	day	0.344	551.00	189.54	L-12
		Mazdoor	day	8.600	424.00	3646.40	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.450	2044.00	13183.80	P&M-026
		c) GST (multiplying factor 0.2016) on (a+b)				3431.18	
		d) Overhead charges @ 20 % on (a+b+c)				4090.18	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2454.11	
		f) Cess @ 1% on (a+b+c+d+e)				269.95	
		Cost for 210 cum = a+b+c+d+e+f				27265.16	
		Rate per cum = (a+b+c+d+e+f)/210				129.83	
					say	<u>130.00</u>	
12.1 (I) B		(iii) Depth above 6m (without de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 180 cum</i>					
		a) Labour					
		Mate	day	0.400	551.00	220.40	L-12
		Mazdoor	day	10.000	424.00	4240.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	2044.00	12264.00	P&M-026
		c) GST (multiplying factor 0.2016) on (a+b)				3371.64	
		d) Overhead charges @ 20 % on (a+b+c)				4019.21	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2411.53	
		f) Cess @ 1% on (a+b+c+d+e)				265.27	
		Cost for 180 cum = a+b+c+d+e+f				26792.05	
		Rate per cum = (a+b+c+d+e+f)/180				148.84	
					say	<u>149.00</u>	
		(iii) c Depth above 6m (with de-watering)					
		<i>Unit = cum</i>					
		<i>Taking output = 180 cum</i>					
		a) Labour					
		Mate	day	0.440	551.00	242.44	L-12
		Mazdoor	day	11.000	424.00	4664.00	L-13
		b) Machinery					
		Hydraulic excavator 1.0 cum bucket capacity	hour	6.600	2044.00	13490.40	P&M-026
		c) GST (multiplying factor 0.2016) on (a+b)				3708.80	
		d) Overhead charges @ 20 % on (a+b+c)				4421.13	

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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)				2652.68	
			f) Cess @ 1% on (a+b+c+d+e)				291.79	
			Cost for 180 cum = a+b+c+d+e+f				29471.24	
			Rate per cum = (a+b+c+d+e+f)/180				163.73	
						say	<u>164.00</u>	
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	551.00	110.20	L-12
			Mazdoor	day	5.000	424.00	2120.00	L-13
		c)	GST (multiplying factor 0.2016) on (a+b)				449.61	
		c)	Overhead charges @ 20 % on (a+b)				535.96	
		d)	Contractor's profit @ 10 % on (a+b+c)				321.58	
		e)	Cess @ 1% on (a+b+c+d)				35.37	
			Cost for 10 cum = a+b+c+d+e				3572.72	
			Rate per cum = (a+b+c+d+e)/10				357.27	
						say	<u>357.00</u>	
		(ii)	Depth upto 3 m (with de-watering)					
			Unit = cum					
			Taking output = 10 cum					
		a)	Labour					
			Mate	day	0.220	551.00	121.22	L-12
			Mazdoor	day	5.500	424.00	2332.00	L-13
		b)	GST (multiplying factor 0.2016) on (a)				494.57	
		c)	Overhead charges @ 20 % on (a+b)				589.56	
		d)	Contractor's profit @ 10 % on (a+b+c)				353.74	
		e)	Cess @ 1% on (a+b+c+d)				38.91	
			Cost for 10 cum = a+b+c+d+e				3930.00	
			Rate per cum = (a+b+c+d+e)/10				393.00	
						say	<u>393.00</u>	
12.1		B	Mechanical Means					
		(II)	Depth upto 3 m (without de-watering)					
			Unit = cum					
			Taking output = 180 cum					
		a)	Labour					
			Mate	day	0.240	551.00	132.24	L-12
			Mazdoor	day	6.000	424.00	2544.00	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	2044.00	12264.00	P&M-026
		c)	GST (multiplying factor 0.2016) on (a+b)				3011.95	
		d)	Overhead charges @ 20 % on (a+b+c)				3590.44	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				2154.26	
		f)	Cess @ 1% on (a+b+c+d+e)				236.97	
			Cost for 180 cum = a+b+c+d+e+f				23933.86	
			Rate per cum = (a+b+c+d+e+f)/180				132.97	
						say	<u>133.00</u>	
		C	Depth upto 3 m (with de-watering)					
			Unit = cum					
			Taking output = 180 cum					
		a)	Labour					
			Mate	day	0.264	551.00	145.46	L-12
			Mazdoor	day	6.600	424.00	2798.40	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.600	2044.00	13490.40	P&M-026
		c)	GST (multiplying factor 0.2016) on (a+b)				3313.15	
		d)	Overhead charges @ 20 % on (a+b+c)				3949.48	

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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)				2369.69	
			f) Cess @ 1% on (a+b+c+d+e)				260.67	
			Cost for 180 cum = a+b+c+d+e+f				26327.25	
			Rate per cum = (a+b+c+d+e+f)/180				146.26	
						say	<u>146.00</u>	
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	551.00	192.85	L-12
			Driller	day	0.500	551.00	275.50	L-06
			Blaster	day	0.250	551.00	137.75	L-03
			Mazdoor	day	8.000	424.00	3392.00	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.000	658.00	658.00	P&M-001
		c)	Material					
			Blasting Material	kg	3.500	166.00	581.00	M-104
			Detonator electric	each	14.000	11.59	162.26	M-094/100
		d)	GST (multiplying factor 0.2016) on (a+b+c)				1088.51	
		e)	Overhead charges @ 20 % on (a+b+c+d)				1297.57	
		f)	Contractor's profit @ 10 % on (a+b+c+d+e)				778.54	
		g)	Cess @ 1% on (a+b+c+d+e+f)				85.64	
			Cost for 10 cum = a+b+c+d+e+f+g				8649.62	
			Rate per cum = (a+b+c+d+e+f+g)/10				864.96	
						say	<u>865.00</u>	
		B	With de-watering					
			Unit = cum					
			Taking output = 10 cum					
		a)	Labour					
			Mate	day	0.385	551.00	212.14	L-12
			Driller	day	0.550	551.00	303.05	L-06
			Blaster	day	0.275	551.00	151.53	L-03
			Mazdoor	day	8.800	424.00	3731.20	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.100	658.00	723.80	P&M-001
		c)	Material					
			Blasting Material	kg	3.500	166.00	581.00	M-104
			Detonator electric	each	14.000	11.59	162.26	M-094/100
		d)	GST (multiplying factor 0.2016) on (a+b+c)				1182.38	
		e)	Overhead charges @ 20 % on (a+b+c+d)				1409.47	
		f)	Contractor's profit @ 10 % on (a+b+c+d+e)				845.68	
		g)	Cess @ 1% on (a+b+c+d+e+f)				93.03	
			Cost for 10 cum = a+b+c+d+e+f+g				9395.54	
			Rate per cum = (a+b+c+d+e+f+g)/10				939.55	
						say	<u>940.00</u>	
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	551.00	110.20	L-12
			Mazdoor	day	5.000	424.00	2120.00	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.000	658.00	3948.00	P&M-001

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) GST (multiplying factor 0.2016) on (a+b)				1245.53	
			d) Overhead charges @ 20 % on (a+b+c)				1484.75	
			e) Contractor's profit @ 10 % on (a+b+c+d)				890.85	
			f) Cess @ 1% on (a+b+c+d+e)				97.99	
			Cost for 10 cum = a+b+c+d+e+f				9897.32	
			Rate per cum = (a+b+c+d+e+f)/10				989.73	
						say	<u>990.00</u>	
		B	Mechanical Means (with de-watering)					
		a)	Labour					
			Mate	day	0.220	551.00	121.22	L-12
			Mazdoor	day	5.500	424.00	2332.00	L-13
		b)	Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.600	658.00	4342.80	P&M-001
			c) GST (multiplying factor 0.2016) on (a+b)				1370.08	
			d) Overhead charges @ 20 % on (a+b+c)				1633.22	
			e) Contractor's profit @ 10 % on (a+b+c+d)				979.93	
			f) Cess @ 1% on (a+b+c+d+e)				107.79	
			Cost for 10 cum = a+b+c+d+e+f				10887.04	
			Rate per cum = (a+b+c+d+e+f)/10				1088.70	
						say	<u>1089.00</u>	
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	551.00	220.40	L-12
			Mazdoor	day	10.000	424.00	4240.00	L-13
		b)	Machinery					
			Tractor-trolley for removal.	hour	2.670	530.00	1415.10	P&M-053
			c) GST (multiplying factor 0.2016) on (a+b)				1184.50	
			d) Overhead charges @ 20 % on (a+b+c)				1412.00	
			e) Contractor's profit @ 10 % on (a+b+c+d)				847.20	
			f) Cess @ 1% on (a+b+c+d+e)				93.19	
			Cost for 10 cum = a+b+c+d+e+f				9412.39	
			Rate per cum = (a+b+c+d+e+f)/10				941.24	
						say	<u>941.00</u>	
		B	Manual means (with de-watering)					
		a)	Labour					
			Mate/Supervisor	day	0.520	551.00	286.52	L-12
			Mazdoor	day	13.000	424.00	5512.00	L-13
		b)	Machinery					
			Tractor-trolley for removal.	hour	2.670	530.00	1415.10	P&M-053
			c) GST (multiplying factor 0.2016) on (a+b)				1454.27	
			d) Overhead charges @ 20 % on (a+b+c)				1733.58	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1040.15	
			f) Cess @ 1% on (a+b+c+d+e)				114.42	
			Cost for 10 cum = a+b+c+d+e+f				11556.04	
			Rate per cum = (a+b+c+d+e+f)/10				1155.60	
						say	<u>1156.00</u>	
12.1 (V)		A	Mechanical Means (without de-watering)					
		a)	Labour					
			Mate	day	0.080	551.00	44.08	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	2.000	424.00	848.00	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.170	2044.00	347.48	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.450	916.00	412.20	P&M-048

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			c) GST (multiplying factor 0.2016) on (a+b)				332.99	
			d) Overhead charges @ 20 % on (a+b+c)				396.95	
			e) Contractor's profit @ 10 % on (a+b+c+d)				238.17	
			f) Cess @ 1% on (a+b+c+d+e)				26.20	
			Cost for 10 cum = a+b+c+d+e+f				2646.07	
			Rate per cum = (a+b+c+d+e+f)/10				264.61	
						say	<u>265.00</u>	
		B	Mechanical Means (with de-watering)					
		a)	Labour					
			Mate	day	0.096	551.00	52.90	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	2.400	424.00	1017.60	L-13
		b)	Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.204	2044.00	416.98	P&M-026
			Tipper 5.5 cum capacity, 4 trips per	hour	0.540	916.00	494.64	P&M-048
			c) GST (multiplying factor 0.2016) on (a+b)				399.60	
			d) Overhead charges @ 20 % on (a+b+c)				476.34	
			e) Contractor's profit @ 10 % on (a+b+c+d)				285.81	
			f) Cess @ 1% on (a+b+c+d+e)				31.44	
			Cost for 10 cum = a+b+c+d+e+f				3175.31	
			Rate per cum = (a+b+c+d+e+f)/10				317.53	
						say	<u>318.00</u>	
		VI	Back Filling in Marshy Foundation Pits					
			Unit : Cum					
			Taking Output : 6 cum					
		a)	Labour					
			Mate	day	0.120	551.00	66.12	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	3.000	424.00	1272.00	L-13
		b)	Machinery					
			Tractor-trolley for transportation	hour	2.000	530.00	1060.00	P&M-053
			c) GST (multiplying factor 0.2016) on (a+b)				483.46	
			d) Overhead charges @ 20 % on (a+b+c)				576.32	
			e) Contractor's profit @ 10 % on (a+b+c+d)				345.79	
			f) Cess @ 1% on (a+b+c+d+e)				38.04	
			Cost for 6 cum = a+b+c+d+e+f				3841.73	
			Rate per cum = (a+b+c+d+e+f)/6				640.29	
						say	<u>640.00</u>	
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	551.00	5.51	L-12
			Mazdoor	day	0.300	424.00	127.20	L-13
		b)	Material					
			Sand (assuming 20 per cent voids)	cum	1.200	650.00	780.00	M-006
			c) GST (multiplying factor 0.2016) on (a+b)				184.00	

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Overhead charges @ 20 % on (a+b+c)				219.34	
			e) Contractor's profit @ 10 % on (a+b+c+d)				131.61	
			f) Cess @ 1% on (a+b+c+d+e)				14.48	
			Rate per cum = a+b+c+d+e+f				1462.14	
						say	<u>1462.00</u>	
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	551.00	352.64	L-12
			Mason	day	1.000	593.00	593.00	L-11
			Mazdoor	day	15.000	424.00	6360.00	L-13
			b) Material					
			40 mm Aggregate	cum	13.500	1900.00	25650.00	M-055
			coarse Sand	cum	6.750	650.00	4387.50	M-005
			cement	tonne	3.450	9100.00	31395.00	M-081
			Cost of water	KL	18.000	71.00	1278.00	M-189
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Water tanker 6 KL capacity	hour	2.000	724.00	1448.00	P&M-060
			c) GST (multiplying factor 0.2016) on (a+b)				15371.22	
			e) Overhead charges @ 20 % on (a+b+c+d)				18323.47	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				10994.08	
			g) Cess @ 1% on (a+b+c+d+e+f)				1209.35	
			Cost for 15 cum = a+b+c+d+e+f+g				122144.26	
			Rate per cum = (a+b+c+d+e+f+g)/15				8142.95	
						say	<u>8143.00</u>	
		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 1st class	each	2500.000	12.00	30000.00	M-079
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis) (Excluding GST, OH, CP & Cess)	cum	1.200	5727.00	6872.40	Item 12.6 (A)
			b) Labour					
			Mate	day	0.480	551.00	264.48	L-12
			Mason	day	4.000	593.00	2372.00	L-11
			Mazdoor	day	8.000	424.00	3392.00	L-13
			c) GST (multiplying factor 0.2016) on (a+b)				8648.82	
			d) Overhead charges @ 20 % on (a+b+c)				10309.94	
			e) Contractor's profit @ 10 % on (a+b+c+d)				6185.96	
			f) Cess @ 1% on (a+b+c+d+e)				680.46	
			Cost for 5 cum = a+b+c+d+e+f				68726.06	
			Rate per cum (a+b+c+d+e+f)/5				13745.21	
						say	<u>13745.00</u>	
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	9100.00	4641.00	M-081

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Sand	cum	1.050	650.00	682.50	M-005
			b) Labour					
			Mate	day	0.040	551.00	22.04	L-12
			Mazdoor	day	0.900	424.00	381.60	L-13
			Total Material and Labour = (a+b)			say	5727.00	
	Sub-analysis (Addl.)	(B)	Cement Mortar1:2 (1cement :2 sand)					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.672	9100.00	6115.20	M-081
			Sand	cum	0.930	650.00	604.50	M-005
			b) Labour					
			Mate	day	0.040	551.00	22.04	L-12
			Mazdoor	day	0.900	424.00	381.60	L-13
			Total Material and Labour = (a+b)			say	7123.00	
	Sub-analysis (Addl.)	(C)	Cement Mortar1:4 (1cement :4 sand)					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.403	9100.00	3667.30	M-081
			Sand	cum	1.120	650.00	728.00	M-005
			b) Labour					
			Mate	day	0.040	551.00	22.04	L-12
			Mazdoor	day	0.900	424.00	381.60	L-13
			Total Material and Labour = (a+b)			say	4799.00	
	Sub-analysis (Addl.)	(D)	Cement Mortar1:6 (1cement :6 sand)					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.288	9100.00	2620.80	M-081
			Sand	cum	1.337	650.00	869.05	M-005
			b) Labour					
			Mate	day	0.040	551.00	22.04	L-12
			Mazdoor	day	0.900	424.00	381.60	L-13
			Total Material and Labour = (a+b)			say	3893.00	
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	605.00	3327.50	M-169
			Through and bond stone	each	35.000	15.00	525.00	M-182
			(35no.x0.24mx0.24mx0.39m = 0.79 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis) (Excluding GST,OH,CP &Cess)	cum	1.500	5727.00	8590.50	Item 12.6 (A)
			b) Labour					
			Mate	day	0.660	551.00	363.66	L-12
			Mason	day	7.500	593.00	4447.50	L-11
			Mazdoor	day	9.000	424.00	3816.00	L-13
			c) GST (multiplying factor 0.2016) on (a+b)				4247.74	
			d) Overhead charges @ 20 % on (a+b+c)				5063.58	
			e) Contractor's profit @ 10 % on (a+b+c+d)				3038.15	
			f) Cess @ 1% on (a+b+c+d+e)				334.20	
			Cost for 5 cum = a+b+c+d+e+f				33753.83	
			Rate per cum (a+b+c+d+e+f)/5				6750.77	
						say	6751.00	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
1405.3	(B)	Random Rubble Masonry (coursed/uncoursed) <i>Unit = cum</i> <i>Taking output = 5 cum</i> a) Material Stone cum 5.500 605.00 3327.50 M-148 Through and bond stone each 35.000 15.00 525.00 M-182 (35nos.x0.24mx0.24mx0.39m = 0.79 cu.m) Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis) (Excluding GST,OH,CP &Cess) cum 1.550 5727.00 8876.85 Item 12.6 (A) b) Labour Mate day 0.620 551.00 341.62 L-12 Mason day 6.000 593.00 3558.00 L-11 Mazdoor day 9.000 424.00 3816.00 L-13 c) GST (multiplying factor 0.2016) on (a+b) 4121.71 d) Overhead charges @ 20 % on (a+b+c) 4913.34 e) Contractor's profit @ 10 % on (a+b+c+d) 2948.00 f) Cess @ 1% on (a+b+c+d+e) 324.28 Cost for 5 cum = a+b+c+d+e+f 32752.30 Rate per cum (a+b+c+d+e+f)/5 6550.46 <div style="text-align: right;">say 6550.00</div>					
		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 <i>Unit = cum</i> <i>Taking output = 15 cum</i> a) Material Cement tonne 4.130 9100.00 37583.00 M-081 Coarse sand cum 6.750 650.00 4387.50 M-005 40 mm Aggregate cum 8.100 1900.00 15390.00 M-055 20 mm Aggregate cum 4.050 1900.00 7695.00 M-053 10 mm Aggregate cum 1.350 1800.00 2430.00 M-051 b) Labour Mate day 0.860 551.00 473.86 L-12 Mason day 1.500 593.00 889.50 L-11 Mazdoor day 20.000 424.00 8480.00 L-13 c) Machinery Concrete mixer (cap. 0.40/0.28 cum) hour 6.000 291.00 1746.00 P&M-009 Generator 63 KVA hour 6.000 883.00 5298.00 P&M-019 Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) 5625.000 d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery 3374.91 e) GST (multiplying factor 0.2016) on (a+b+c+d) 17689.95 f) Overhead charges @ 20 % on (a+b+c+d+e) 21087.54 g) Contractor's profit @ 10 % on (a+b+c+d+e+f) 12652.53 h) Cess @ 1% on (a+b+c+d+e+f+g) 1391.78 Cost for 15 cum = a+b+c+d+e+f+g+h 140569.57 Rate per cum = (a+b+c+d+e+f+g+h)/15 9371.30 <div style="text-align: right;">say 9371.00</div>					
		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.					

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.8		B	PCC Grade M20					
			<i>Unit : cum</i>					
			<i>Taking output = 15 cum</i>					
		a)	Material					
			Cement	tonne	5.160	9100.00	46956.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			40 mm Aggregate	cum	5.400	1900.00	10260.00	M-055
			20 mm Aggregate	cum	5.400	1900.00	10260.00	M-053
			10 mm Aggregate	cum	2.700	1800.00	4860.00	M-051
		b)	Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6090.000			
		d)	Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				3653.95	
		e)	GST (multiplying factor 0.2016) on (a+b+c+d)				19152.57	
		f)	Overhead charges @ 20 % on (a+b+c+d+e)				22831.08	
		g)	Contractor's profit @ 10 % on (a+b+c+d+e+f)				13698.65	
		h)	Cess @ 1% on (a+b+c+d+e+f+g)				1506.85	
			Cost for 15 cum = a+b+c+d+e+f+g+h				152191.96	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				10146.13	
						say	<u>10146.00</u>	
12.8		C	RCC Grade M20					
		Case I	Using Concrete Mixer					
			<i>Unit = cum</i>					
			<i>Taking output = 15 cum</i>					
		a)	Material					
			Cement	tonne	5.210	9100.00	47411.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b)	Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6103.000			
		d)	Formwork @ 4 per cent on (a+b+c)				3661.35	
		e)	GST (multiplying factor 0.2016) on (a+b+c+d)				19191.35	
		f)	Overhead charges @ 20 % on (a+b+c+d+e)				22877.31	
		g)	Contractor's profit @ 10 % on (a+b+c+d+e+f)				13726.39	
		h)	Cess @ 1% on (a+b+c+d+e+f+g)				1509.90	
			Cost for 15 cum = a+b+c+d+e+f+g+h				152500.16	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				10166.68	
						say	<u>10167.00</u>	
12.8 C		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
			<i>Unit : cum</i>					
			<i>Taking Output = 120 cum</i>					

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Material					
		Cement	tonne	41.660	9100.00	379106.00	M-081
		Coarse Sand	cum	54.000	650.00	35100.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
		b) Labour					
		Mate	day	0.840	551.00	462.84	L-12
		Mason	day	3.000	593.00	1779.00	L-11
		Mazdoor	day	18.000	424.00	7632.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
		Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
		Lead beyond 1 km, L-lead in km	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
		Concrete Pump	hour	6	2726.00	16356.00	P&M-007
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		5802.000			
		d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				27845.87	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				145956.93	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				173989.93	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				104393.96	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				11483.34	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1159816.87	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				9665.14	
					say	<u>9665.00</u>	
12.8		D PCC Grade M25					
		Case I Using Concrete Mixer					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	tonne	5.990	9100.00	54509.00	M-081
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		40 mm Aggregate	cum	5.400	1900.00	10260.00	M-055
		20 mm Aggregate	cum	5.400	1900.00	10260.00	M-053
		10 mm Aggregate	cum	2.700	1800.00	4860.00	M-051
		b) Labour					
		Mate	day	0.860	551.00	473.86	L-12
		Mason	day	1.500	593.00	889.50	L-11
		Mazdoor	day	20.000	424.00	8480.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
		Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			6594.000		
		d) Formwork @ 3.75 per cent of (a+b+c)				3708.82	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				20686.31	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				24659.40	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				14795.64	

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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)				1627.52	
			Cost for 15 cum = a+b+c+d+e+f+g+h				164379.55	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				10958.64	
						say	<u>10959.00</u>	
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	9100.00	436345.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			40 mm Aggregate	cum	43.200	1900.00	82080.00	M-055
			20 mm Aggregate	cum	43.200	1900.00	82080.00	M-053
			10 mm Aggregate	cum	21.600	1800.00	38880.00	M-051
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.000	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.000	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	6.000	1265.00	7590.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.000	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			6202.000		
			d) Formwork @ 3.75 per cent of cost of concrete i.e. cost of material, labour and machinery				27906.03	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				155648.68	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				185543.11	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				111325.87	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12245.85	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1236830.38	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10306.92	
						say	<u>10307.00</u>	
12.8	E		RCC Grade M25					
	Case I		Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.050	9100.00	55055.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
			b) Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			6612.000		

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) Formwork @ 3.75 per cent of a+b+c.				3719.17	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				20744.04	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				24728.21	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				14836.93	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1632.06	
			Cost for 15 cum = a+b+c+d+e+f+g+h				164838.27	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				10989.22	
						say	<u>10989.00</u>	
12.8 E	Case II		With Batching Plant, Transit Mixer and Concrete Pump					
			<i>Unit: cum</i>					
			<i>Taking Output = 120 cum</i>					
			a) Material					
			Cement	tonne	48.380	9100.00	440258.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader 1 cum capacity 1 cum	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			6311.000		
			d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				28398.71	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				158396.63	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				188818.84	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				113291.30	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12462.04	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1258666.36	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10488.89	
						say	<u>10489.00</u>	
12.8	F		PCC Grade M30					
	Case I		Using Concrete Mixer					
			<i>Unit = cum</i>					
			<i>Taking output = 15 cum</i>					
			a) Material					
			Cement	tonne	6.080	9100.00	55328.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			40 mm Aggregate	cum	5.400	1900.00	10260.00	M-055
			20 mm Aggregate	cum	5.400	1900.00	10260.00	M-053
			10 mm Aggregate	cum	2.700	1800.00	4860.00	M-051
			b) Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor	day	20.000	424.00	8480.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6649.000			
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				3490.23	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				20807.36	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				24803.69	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				14882.21	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1637.04	
			Cost for 15 cum = a+b+c+d+e+f+g+h				165341.39	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11022.76	
						say	<u>11023.00</u>	
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	9100.00	442260.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			40 mm Aggregate	cum	43.200	1900.00	82080.00	M-055
			20 mm Aggregate	cum	43.200	1900.00	82080.00	M-053
			10 mm Aggregate	cum	21.600	1800.00	38880.00	M-051
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6346.000			
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				26651.13	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				158883.37	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				189399.07	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				113639.44	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12500.34	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1262534.19	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10521.12	
						say	<u>10521.00</u>	
12.8	G		RCC Grade M30					
	Case I		Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Material					
			Cement	tonne	6.100	9100.00	55510.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
			b) Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6643.000			
			d) Formwork @ 3.5 per cent on cost of concrete i.e. cost of material, labour and machinery				3487.15	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				20788.99	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				24781.80	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				14869.08	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1635.60	
			Cost for 15 cum = a+b+c+d+e+f+g+h				165195.48	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11013.03	
						say	<u>11013.00</u>	
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	9100.00	444080.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6343.000			
			d) Formwork @ 3.5 per cent of cost of concrete i.e. cost of material, labour and machinery				26639.23	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				158812.43	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				189314.50	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				113588.70	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				12494.76	
			Cost for 120 cum = a+b+c+d+e+f+g+h				1261970.46	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				10516.42	
						say	<u>10516.00</u>	

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.8		H	RCC Grade M35					
		Case I	Using Concrete Mixer					
			<i>Unit = cum</i>					
			<i>Taking output = 15 cum</i>					
		a)	Material					
			Cement	tonne	6.330	9100.00	57603.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b)	Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6782.000			
		d)	Formwork @ 3 per cent on a+b+c				3051.78	
		e)	GST (multiplying factor 0.2016) on (a+b+c+d)				21123.17	
		f)	Overhead charges @ 20 % on (a+b+c+d+e)				25180.16	
		g)	Contractor's profit @ 10 % on (a+b+c+d+e+f)				15108.10	
		h)	Cess @ 1% on (a+b+c+d+e+f+g)				1661.89	
			Cost for 15 cum = a+b+c+d+e+f+g+h				167850.96	
			Rate per cum = (a+b+c+d+e+f+g+h)/15				11190.06	
						say	<u>11190.00</u>	
12.8 H		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			<i>Unit ; cum</i>					
			<i>Taking Output = 120 cum</i>					
		a)	Material					
			Cement	tonne	50.640	9100.00	460824.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
		b)	Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
		c)	Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6483.000			
		d)	Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				23335.95	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				161522.08	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				192544.57	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				115526.74	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				12707.94	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1283502.12	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				10695.85	
					say	<u>10696.00</u>	
		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.					
		<i>Unit = 1 No</i>					
		<i>Taking output = 1 No.</i>					
		a) Material					
		Earth (compacted)	cum	251.200	0.00	0.00	M-092
		Sand bags	each	750.000	11.00	8250.00	M-159
		b) Labour					
		Mate	day	0.400	551.00	220.40	L-12
		Mazdoor for filling sand bags, stitching and placing	day	15.000	424.00	6360.00	L-13
		c) Machinery					
		Crane with grab 1 cum capacity	hour	20.000	1166.00	23320.00	P&M-012
		Consumables @ 2.5 per cent of (c) above				583.00	
		d) GST (multiplying factor 0.2016) on (a+b+c)				7808.65	
		e) Overhead charges @ 20 % on (a+b+c+d)				9308.41	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				5585.05	
		g) Cess @ 1% on (a+b+c+d+e+f)				614.36	
		Rate per No. (a+b+c+d+e+f+g)				62049.87	
					say	<u>62050.00</u>	
		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.					
		<i>Unit = 1No</i>					
		<i>Taking output = 1 No</i>					
		a) Material					
		Earth (compacted)	cum	904.320	0.00	0.00	M-092
		Sand bags	each	6000.000	11.00	66000.00	M-159
		Wooden ballies 8" Dia and 9 m long	each	95.000	580.00	55100.00	M-194
		Wooden ballies 2" Dia for bracing	metre	190.000	45.00	8550.00	M-193
		b) Labour					
		Mate	day	5.600	551.00	3085.60	L-12
		Mazdoor for piling 8" dia ballies for piling 8" dia ballies	day	18.000	424.00	7632.00	L-13
		Mazdoor for bracing with 2" dia ballies	day	12.000	424.00	5088.00	L-13
		Mazdoor for filling sand bags, stitching and placing	day	110.000	424.00	46640.00	L-13
		c) Machinery					
		Crane with grab 1 cum capacity	hour	50.000	1166.00	58300.00	P&M-012

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Consumables and other arrangements for piling ballies @ 2.5 per cent of (a+b+c).				6259.89	
		d) GST (multiplying factor 0.2016) on (a+b+c)				51741.75	
		e) Overhead charges @ 20 % on (a+b+c+d)				61679.45	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				37007.67	
		g) Cess @ 1% on (a+b+c+d+e+f)				4070.84	
		Rate per No. (a+b+c+d+e+f+g)				411155.20	
					say	<u>411155.00</u>	
		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	11.00	3300.00	M-159
		b) Labour					
		Mate	day	0.240	551.00	132.24	L-12
		Mazdoor for filling sand bags, stitching and placing	day	6.000	424.00	2544.00	L-13
		c) Machinery					
		Front end Loader 1 cum capacity	hour	27.000	1838.00	49626.00	P&M-017
		Tipper 5.5 cum capacity	hour	28.000	916.00	25648.00	P&M-048
		d) GST (multiplying factor 0.2016) on (a+b+c)				16380.05	
		e) Overhead charges @ 20 % on (a+b+c+d)				19526.06	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11715.64	
		g) Cess @ 1% on (a+b+c+d+e+f)				1288.72	
		Cost for 30 m (a+b+c+d+e+f+g)				130160.71	
		Rate per m (a+b+c+d+e+f+g)/30				4338.69	
					say	<u>4339.00</u>	
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	50728.00	53264.40	M-179
		Nuts & bolts	Kg	20.000	120.00	2400.00	M-130
		b) Labour					
		(for cutting, bending, making holes, joining, welding and erecting in position)					
		Mate	day	1.320	551.00	727.32	L-12
		Fitter	day	5.500	593.00	3261.50	L-08
		Blacksmith	day	5.500	593.00	3261.50	L-02
		Welder	day	5.500	593.00	3261.50	L-02
		Mazdoor	day	16.500	424.00	6996.00	L-13
		Electrodes, cutting gas and other consumables @ 10 per cent of cost of (a) above				5566.44	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) GST (multiplying factor 0.2016) on (a+b)				15873.71	
		d) Overhead charges @ 20 % on (a+b+c)				18922.47	
		e) Contractor's profit @ 10 % on (a+b+c+d)				11353.48	
		f) Cess @ 1% on (a+b+c+d+e)				1248.88	
		Rate per MT (a+b+c+d+e+f)				126137.20	
					say	<u>126137.00</u>	
12.11	1200, 1500 & 1700	Plain/Reinforced Cement Concrete, in Well Foundation complete as per Drawing and Technical Specification. <i>Unit = 1 cum</i> <i>Taking output = 1 cum</i>					
		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)				6103.00	12.8 (C) Case I
		d) formwork @ 20 per cent of the cost of concrete				1220.60	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1476.44	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1760.01	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1056.01	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				116.16	
		Rate perm (a+b+c+d+e+f+g+h)				11732.22	
					say	<u>11732.00</u>	
12.11 A		Case II With Batching Plant, Transit Mixer and Concrete Pump					
(i)		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) (excluding GST, OH, CP & Cess)				5802.00	12.8 (C) Case II
		d) formwork @ 20 per cent of the cost of concrete				1160.40	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1403.62	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1673.20	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1003.92	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				110.43	
		Rate perm (a+b+c+d+e+f+g+h)				11153.57	
					say	<u>11154.00</u>	
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)				6612.00	Item 12.8 (E) I
		d) formwork @ 20 per cent of the cost of concrete				1322.40	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1599.58	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1906.80	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1144.08	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				125.85	
		Rate perm (a+b+c+d+e+f+g+h)				12710.71	
					say	<u>12711.00</u>	
12.11 A		Case II With Batching Plant, Transit Mixer and Concrete Pump					
(ii)		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) (excluding GST, OH, CP & Cess)				6415.00	Item 12.8 (E) II

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) formwork @ 20 per cent of the cost of concrete				1283.00	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1551.92	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1849.98	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1109.99	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				122.10	
			Rate perm (a+b+c+d+e+f+g+h)				12331.99	
						say	<u>12332.00</u>	
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)				6782.00	Item 12.8 (H) I
			d) formwork @ 20 per cent of the cost of concrete				1356.40	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1640.70	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1955.82	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1173.49	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				129.08	
			Rate perm (a+b+c+d+e+f+g+h)				13037.49	
						say	<u>13037.00</u>	
12.11 A		Case II	With Batching Plant, Transit Mixer and Concrete Pump					
(iii)			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) (excluding GST, OH, CP & Cess)				6591.00	Item 12.8 (H) II (SA)
			d) formwork @ 20 per cent of the cost of concrete				1318.20	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1594.49	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1900.74	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1140.44	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				125.45	
			Rate perm (a+b+c+d+e+f+g+h)				12670.32	
						say	<u>12670.00</u>	
		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)				5625.00	Item 12.8 A (SA)
			d) formwork @ 10 per cent of the cost of concrete				562.50	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1247.40	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1486.98	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				892.19	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				98.14	
			Rate perm (a+b+c+d+e+f+g+h)				9912.21	
						say	<u>9912.00</u>	

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 B		(ii)	PCC M20 Grade					
			Same as for 12.8 (B) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	Using Concrete Mixer					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) (excluding GST, OH, CP & Cess)				6090.00	Item 12.8 (B)
			d) formwork @ 10 per cent of the cost of concrete				609.00	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1350.52	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1609.90	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				965.94	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				106.25	
			Rate perm (a+b+c+d+e+f+g+h)				10731.61	
						say	<u>10732.00</u>	
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)				6103.00	Item 12.8 (C) I
			d) formwork @ 10 per cent of the cost of concrete				610.30	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1353.40	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1613.34	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				968.00	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				106.48	
			Rate perm (a+b+c+d+e+f+g+h)				10754.52	
						say	<u>10755.00</u>	
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)				5802.00	Item 12.8 (C) II (SA)
			d) formwork @ 10 per cent of the cost of concrete				580.20	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1286.65	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1533.77	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				920.26	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				101.23	
			Rate perm (a+b+c+d+e+f+g+h)				10224.11	
						say	<u>10224.00</u>	
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)				6594.00	Item 12.8 (D) I
			d) formwork @ 10 per cent of the cost of concrete				659.40	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1462.29	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1743.14	

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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)				1045.88	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				115.05	
			Rate perm (a+b+c+d+e+f+g+h)				11619.76	
						say	<u>11620.00</u>	
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)				6297.00	Item 12.8 (D) II (SA)
			d) formwork @ 10 per cent of the cost of concrete				629.70	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1396.42	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1664.62	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				998.77	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				109.87	
			Rate perm (a+b+c+d+e+f+g+h)				11096.38	
						say	<u>11096.00</u>	
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)				6612.00	Item 12.8 (E) I
			d) formwork @ 10 per cent of the cost of concrete				661.20	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1466.28	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1747.90	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1048.74	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				115.36	
			Rate perm (a+b+c+d+e+f+g+h)				11651.48	
						say	<u>11651.00</u>	
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)				6415.00	Item 12.8 (E) II
			d) formwork @ 10 per cent of the cost of concrete				641.50	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1422.59	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1695.82	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1017.49	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				111.92	
			Rate perm (a+b+c+d+e+f+g+h)				11304.32	
						say	<u>11304.00</u>	
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)				6649.00	Item 12.8 (F) I
			d) formwork @ 10 per cent of the cost of concrete				664.90	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1474.48	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1757.68	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1054.61	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				116.01	
			Rate perm (a+b+c+d+e+f+g+h)				11716.68	
						say	<u>11717.00</u>	

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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)				6346.00	Item 12.8 (F) II
			d) formwork @ 10 per cent of the cost of concrete				634.60	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1407.29	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1677.58	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1006.55	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				110.72	
			Rate perm (a+b+c+d+e+f+g+h)				11182.74	
						say	<u>11183.00</u>	
'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)				6643.00	Item 12.8 (G) I
			d) formwork @ 10 per cent of the cost of concrete				664.30	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1473.15	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1756.09	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1053.65	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				115.90	
			Rate perm (a+b+c+d+e+f+g+h)				11706.09	
						say	<u>11706.00</u>	
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)				6343.00	Item 12.8 (G) II
			d) formwork @ 10 per cent of the cost of concrete				634.30	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1406.62	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1676.78	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1006.07	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				110.67	
			Rate perm (a+b+c+d+e+f+g+h)				11177.44	
						say	<u>11177.00</u>	
'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)				6782.00	12.8 (H)
			d) formwork @ 10 per cent of the cost of concrete				678.20	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1503.98	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1792.84	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1075.70	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				118.33	
			Rate perm (a+b+c+d+e+f+g+h)				11951.05	
						say	<u>11951.00</u>	

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Sr No	Ref. to MoRTH/DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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)				6591.00	
			d) formwork @ 10 per cent of the cost of concrete				659.10	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				1461.62	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				1742.34	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1045.41	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				114.99	
			Rate perm (a+b+c+d+e+f+g+h)				11614.46	
						say	<u>11614.00</u>	
'12.11 B	(ix)		RCC M40 Grade					
			Using Batching Plant, Transit Mixer and Concrete Pump					
			<i>Unit = cum</i>					
			<i>Taking output = 120 cum</i>					
			a) Material					
			Cement	tonne	51.600	9100.00	469560.00	M-081
			Coarse Sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			Admixture	kg	206.000	64.00	13184.00	M-180
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Meson	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.000	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.000	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne. km	300xL	80.00	0.00	Lead= 0 , P&M-050
			Concrete Pump	hour	6.000	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			53319.000		
			d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery				79978.48	
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				177360.29	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				211424.72	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				126854.83	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				13954.03	
			cost of 120 cum = a+b+c+d+e+f+g+h				1409357.19	
			Rate per cum = (a+b+c+d+e+f+g+h)/120				11744.64	
						say	<u>11745.00</u>	
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					
			<i>Unit = cum</i>					
			<i>Taking output = 15 cum</i>					

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
a) Material								
			Cement	tonne	5.550	9100.00	50505.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			40 mm Aggregate	cum	5.400	1900.00	10260.00	M-055
			20 mm Aggregate	cum	5.400	1900.00	10260.00	M-053
			10 mm Aggregate	cum	2.700	1800.00	4860.00	M-051
			Admixture	Kg	18.600	64.00	1190.40	M-180
b) Labour								
			Mate	day	0.900	551.00	495.90	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
c) Machinery								
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.000	490.00	2940.00	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6604.000			
			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..				4566.42	
			d) GST (multiplying factor 0.2016) on (a+b+c)				20889.13	
			e) Overhead charges @ 20 % on (a+b+c+d)				24901.17	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				14940.70	
			g) Cess @ 1% on (a+b+c+d+e+f)				1643.48	
			cost of 15 cum = a+b+c+d+e+f+g				165991.20	
			Rate per cum = (a+b+c+d+e+f+g)/15				11066.08	
						say	<u>11066.00</u>	
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	9100.00	404040.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			Admixture	Kg	148.800	64.00	9523.20	M-180
b) Labour								
			Mate	day	0.880	551.00	484.88	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
c) Machinery								
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				6089.000			
		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..				32971.95	
		d) GST (multiplying factor 0.2016) on (a+b+c)				153941.36	
		e) Overhead charges @ 20 % on (a+b+c+d)				183507.88	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				110104.73	
		g) Cess @ 1% on (a+b+c+d+e+f)				12111.52	
		cost of 120 cum = a+b+c+d+e+f+g				1223263.52	
		Rate per cum = (a+b+c+d+e+f+g)/120				10193.86	
					say	<u>10194.00</u>	
12.11 C	(ii)	PCC Grade M25					
	Case I	Using Concrete Mixer					
		Unit = cum					
		Taking output = 15 cum					
		a) Material					
		Cement	tonne	5.990	9100.00	54509.00	M-081
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		40 mm Aggregate	cum	5.400	1900.00	10260.00	M-055
		20 mm Aggregate	cum	5.400	1900.00	10260.00	M-053
		10 mm Aggregate	cum	2.700	1800.00	4860.00	M-051
		Admixture	Kg	21.600	64.00	1382.40	M-180
		b) Labour					
		Mate	day	0.900	551.00	495.90	L-12
		Mason	day	1.500	593.00	889.50	L-11
		Mazdoor	day	20.000	424.00	8480.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
		Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.000	490.00	2940.00	P&M-013
		Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6884.000			
		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..				4776.22	
		d) GST (multiplying factor 0.2016) on (a+b+c)				21777.34	
		e) Overhead charges @ 20 % on (a+b+c+d)				25959.97	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				15575.98	
		g) Cess @ 1% on (a+b+c+d+e+f)				1713.36	
		cost of 15 cum = a+b+c+d+e+f+g				173049.17	
		Rate per cum = (a+b+c+d+e+f+g)/15				11536.61	
					say	<u>11537.00</u>	
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	9100.00	435708.00	M-081
		Coarse sand	cum	54.000	650.00	35100.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
		Admixture	Kg	172.800	64.00	11059.20	M-180

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Labour					
			Mate	day	0.880	551.00	484.88	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6366.000			
			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.				34632.15	
			d) GST (multiplying factor 0.2016) on (a+b+c)				160969.99	
			e) Overhead charges @ 20 % on (a+b+c+d)				191886.44	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				115131.87	
			g) Cess @ 1% on (a+b+c+d+e+f)				12664.51	
			cost of 120 cum = a+b+c+d+e+f+g+h				1279115.04	
			Rate per cum = (a+b+c+d+e+f+g)/120				10659.29	
						say	<u>10659.00</u>	
'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	9100.00	55328.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			40 mm Aggregate	cum	5.400	1900.00	10260.00	M-055
			20 mm Aggregate	cum	5.400	1900.00	10260.00	M-053
			10 mm Aggregate	cum	2.700	1800.00	4860.00	M-051
			Admixture	Kg	21.600	64.00	1382.40	M-180
			b) Labour					
			Mate	day	0.900	551.00	495.90	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.000	490.00	2940.00	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6938.000			
			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.				4817.17	

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			d) GST (multiplying factor 0.2016) on (a+b+c)				21950.71	
			e) Overhead charges @ 20 % on (a+b+c+d)				26166.64	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				15699.98	
			g) Cess @ 1% on (a+b+c+d+e+f)				1727.00	
			cost of 15 cum = a+b+c+d+e+f+g				174426.80	
			Rate per cum = (a+b+c+d+e+f+g)/15				11628.45	
						say	<u>11628.00</u>	
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	9100.00	442624.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			Admixture	Kg	172.800	64.00	11059.20	M-180
			b) Labour					
			Mate	day	0.880	551.00	484.88	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)			6423.000		
			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..				34977.95	
			d) GST (multiplying factor 0.2016) on (a+b+c)				162433.96	
			e) Overhead charges @ 20 % on (a+b+c+d)				193631.60	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				116178.96	
			g) Cess @ 1% on (a+b+c+d+e+f)				12779.69	
			cost of 120 cum = a+b+c+d+e+f+g+h				1290748.24	
			Rate per cum = (a+b+c+d+e+f+g)/120				10756.24	
						say	<u>10756.00</u>	
'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	9100.00	57239.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			40 mm Aggregate	cum	5.400	1900.00	10260.00	M-055
			20 mm Aggregate	cum	5.400	1900.00	10260.00	M-053
			10 mm Aggregate	cum	2.700	1800.00	4860.00	M-051
			Admixture	Kg	21.600	64.00	1382.40	M-180

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			b) Labour					
			Mate	day	0.900	551.00	495.90	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.000	490.00	2940.00	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		7066.000			
			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.				4912.72	
			d) GST (multiplying factor 0.2016) on (a+b+c)				22355.23	
			e) Overhead charges @ 20 % on (a+b+c+d)				26648.85	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				15989.31	
			g) Cess @ 1% on (a+b+c+d+e+f)				1758.82	
			cost of 15 cum = a+b+c+d+e+f+g				177641.23	
			Rate per cum = (a+b+c+d+e+f+g)/15				11842.75	
						say	<u>11843.00</u>	
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	9100.00	457548.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			Admixture	Kg	172.800	64.00	11059.20	M-180
			b) Labour					
			Mate	day	0.880	551.00	484.88	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		6548.000			
			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.				35724.15	
			d) GST (multiplying factor 0.2016) on (a+b+c)				165593.08	

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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)				197397.46	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				118438.48	
			g) Cess @ 1% on (a+b+c+d+e+f)				13028.23	
			cost of 120 cum = a+b+c+d+e+f+g				1315851.48	
			Rate per cum = (a+b+c+d+e+f+g)/120				10965.43	
						say	<u>10965.00</u>	
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)				6604.00	Item 12.11 C (i) I
			d) GST (multiplying factor 0.2016) on (a+b+c)				1331.37	
			e) Overhead charges @ 20 % on (a+b+c+d)				1587.07	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				952.24	
			g) Cess @ 1% on (a+b+c+d+e+f)				104.75	
			Rate per cum = (a+b+c+d+e+f+g)				10579.43	
						say	<u>10579.00</u>	
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)				6089.00	Item 12.11 C (i) II
			d) GST (multiplying factor 0.2016) on (a+b+c)				1227.54	
			e) Overhead charges @ 20 % on (a+b+c+d)				1463.31	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				877.99	
			g) Cess @ 1% on (a+b+c+d+e+f)				96.58	
			Rate per cum = (a+b+c+d+e+f+g)				9754.42	
						say	<u>9754.00</u>	
'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)				6884.00	Item 12.11 C (ii) I
			d) GST (multiplying factor 0.2016) on (a+b+c)				1387.81	
			e) Overhead charges @ 20 % on (a+b+c+d)				1654.36	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				992.62	
			g) Cess @ 1% on (a+b+c+d+e+f)				109.19	
			Rate per cum = (a+b+c+d+e+f+g)				11027.98	
						say	<u>11028.00</u>	
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)				6366.00	Item 12.11 C (ii) II
			d) GST (multiplying factor 0.2016) on (a+b+c)				1283.39	
			e) Overhead charges @ 20 % on (a+b+c+d)				1529.88	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				917.93	
			g) Cess @ 1% on (a+b+c+d+e+f)				100.97	
			Rate per cum = (a+b+c+d+e+f+g)				10198.17	
						say	<u>10198.00</u>	
12.11 D		(iii)	Grade M30 PCC					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					

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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)				6938.00	Item 12.11 C (iii) I
		d) GST (multiplying factor 0.2016) on (a+b+c)				1398.70	
		e) Overhead charges @ 20 % on (a+b+c+d)				1667.34	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1000.40	
		g) Cess @ 1% on (a+b+c+d+e+f)				110.04	
		Rate per cum = (a+b+c+d+e+f+g)				11114.48	
					say	<u>11114.00</u>	
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)				6423.00	Item 12.11 C (iii) II
		d) GST (multiplying factor 0.2016) on (a+b+c)				1294.88	
		e) Overhead charges @ 20 % on (a+b+c+d)				1543.58	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				926.15	
		g) Cess @ 1% on (a+b+c+d+e+f)				101.88	
		Rate per cum = (a+b+c+d+e+f+g)				10289.49	
					say	<u>10289.00</u>	
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)				5625.00	Item 12.8 (a)
		d) GST (multiplying factor 0.2016) on (a+b+c)				1134.00	
		e) Overhead charges @ 20 % on (a+b+c+d)				1351.80	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				811.08	
		g) Cess @ 1% on (a+b+c+d+e+f)				89.22	
		Rate per cum = (a+b+c+d+e+f+g)				9011.10	
					say	<u>9011.00</u>	
'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)				6090.00	Item 12.8 (b)
		d) GST (multiplying factor 0.2016) on (a+b+c)				1227.74	
		e) Overhead charges @ 20 % on (a+b+c+d)				1463.55	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				878.13	
		g) Cess @ 1% on (a+b+c+d+e+f)				96.59	
		Rate per cum = (a+b+c+d+e+f+g)				9756.01	
					say	<u>9756.00</u>	
'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)				6594.00	Item 12.8 (D) I
		d) GST (multiplying factor 0.2016) on (a+b+c)				1329.35	
		e) Overhead charges @ 20 % on (a+b+c+d)				1584.67	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				950.80	
		g) Cess @ 1% on (a+b+c+d+e+f)				104.59	
		Rate per cum = (a+b+c+d+e+f+g)				10563.41	
					say	<u>10563.00</u>	

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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)				6297.00	Item 12.8 (D) II (SA)
			d) GST (multiplying factor 0.2016) on (a+b+c)				1269.48	
			e) Overhead charges @ 20 % on (a+b+c+d)				1513.30	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				907.98	
			g) Cess @ 1% on (a+b+c+d+e+f)				99.88	
			Rate per cum = (a+b+c+d+e+f+g)				10087.64	
						say	<u>10088.00</u>	
'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)				6649.00	Item 12.8 (F) I
			d) GST (multiplying factor 0.2016) on (a+b+c)				1340.44	
			e) Overhead charges @ 20 % on (a+b+c+d)				1597.89	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				958.73	
			g) Cess @ 1% on (a+b+c+d+e+f)				105.46	
			Rate per cum = (a+b+c+d+e+f+g)				10651.52	
						say	<u>10652.00</u>	
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)				6346.00	Item 12.8 (F) II
			d) GST (multiplying factor 0.2016) on (a+b+c)				1279.35	
			e) Overhead charges @ 20 % on (a+b+c+d)				1525.07	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				915.04	
			g) Cess @ 1% on (a+b+c+d+e+f)				100.65	
			Rate per cum = (a+b+c+d+e+f+g)				10166.11	
						say	<u>10166.00</u>	
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	9100.00	46592.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b)	Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Form Work @ 4 per cent of a+b+c				3628.59	
			d) GST (multiplying factor 0.2016) on (a+b+c)				19019.64	
			e) Overhead charges @ 20 % on (a+b+c+d)				22672.62	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				13603.57	
			g) Cess @ 1% on (a+b+c+d+e+f)				1496.39	
			cost of 15 cum = a+b+c+d+e+f+g				151135.67	
			Rate per cum = (a+b+c+d+e+f+g)/15				10075.71	
						say	<u>10076.00</u>	

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.11 F (i)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			<i>Unit = cum</i>					
			<i>Taking output = 120 cum</i>					
			a) Material					
			Cement	tonne	40.920	9100.00	372372.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader (capacity 1 cum)	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Formwork @ 4 per cent of (a+b+c)				27576.51	
			d) GST (multiplying factor 0.2016) on (a+b+c)				144545.05	
			e) Overhead charges @ 20 % on (a+b+c+d)				172306.88	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				103384.13	
			g) Cess @ 1% on (a+b+c+d+e+f)				11372.25	
			cost of 120 cum = a+b+c+d+e+f+g				1148597.66	
			Rate per cum = (a+b+c+d+e+f+g)/120				9571.65	
						say	<u>9572.00</u>	
12.11 F		(ii)	RCC Grade M25					
		Case I	Using Concrete Mixer					
			<i>Unit = cum</i>					
			<i>Taking output = 15 cum</i>					
			a) Material					
			Cement	tonne	6.050	9100.00	55055.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
			b) Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Form Work @ 3.75 per cent of a+b+c				3719.17	
			d) GST (multiplying factor 0.2016) on (a+b+c)				20744.04	
			e) Overhead charges @ 20 % on (a+b+c+d)				24728.21	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				14836.93	
			g) Cess @ 1% on (a+b+c+d+e+f)				1632.06	
			cost of 15 cum = a+b+c+d+e+f+g				164838.27	
			Rate per cum = (a+b+c+d+e+f+g)/15				10989.22	
						say	<u>10989.00</u>	
12.11 F (ii)		Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
			<i>Unit = cum</i>					
			<i>Taking output = 120 cum</i>					

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			a) Material					
			Cement	tonne	48.400	9100.00	440440.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader (capacity 1 cum)	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Formwork @ 3.75 per cent of (a+b+c)				28405.53	
			d) GST (multiplying factor 0.2016) on (a+b+c)				158434.69	
			e) Overhead charges @ 20 % on (a+b+c+d)				188864.21	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				113318.53	
			g) Cess @ 1% on (a+b+c+d+e+f)				12465.04	
			cost of 120 cum = a+b+c+d+e+f+g				1258968.84	
			Rate per cum = (a+b+c+d+e+f+g)/120				10491.41	
						say	<u>10491.00</u>	
12.11 F		(iii)	RCC Grade M30					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.100	9100.00	55510.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
			b) Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Formwork @ 3.5 per cent of (a+b+c)				3487.15	
			d) GST (multiplying factor 0.2016) on (a+b+c)				20788.99	
			e) Overhead charges @ 20 % on (a+b+c+d)				24781.80	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				14869.08	
			g) Cess @ 1% on (a+b+c+d+e+f)				1635.60	
			cost of 15 cum = a+b+c+d+e+f+g				165195.48	
			Rate per cum = (a+b+c+d+e+f+g)/15				11013.03	
						say	<u>11013.00</u>	
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	9100.00	443989.00	M-081
			Coarse sand	cum	54.000	650.00	35100.00	M-004

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader (capacity 1 cum)	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Formwork @ 3.5 per cent of (a+b+c)				26636.04	
			d) GST (multiplying factor 0.2016) on (a+b+c)				158793.44	
			e) Overhead charges @ 20 % on (a+b+c+d)				189291.86	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				113575.12	
			g) Cess @ 1% on (a+b+c+d+e+f)				12493.26	
			cost of 120 cum = a+b+c+d+e+f+g				1261819.56	
			Rate per cum = (a+b+c+d+e+f+g)/120				10515.16	
						say	<u>10515.00</u>	
12.11 F		(iv)	RCC Grade M35					
		Case I	Using Concrete Mixer					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.330	9100.00	57603.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
			b) Labour					
			Mate	day	0.860	551.00	473.86	L-12
			Mason	day	1.500	593.00	889.50	L-11
			Mazdoor	day	20.000	424.00	8480.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
			Formwork @ 3 per cent of (a+b+c)				3051.78	
			d) GST (multiplying factor 0.2016) on (a+b+c)				21123.17	
			e) Overhead charges @ 20 % on (a+b+c+d)				25180.16	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				15108.10	
			g) Cess @ 1% on (a+b+c+d+e+f)				1661.89	
			cost of 15 cum = a+b+c+d+e+f+g				167850.96	
			Rate per cum = (a+b+c+d+e+f+g)/15				11190.06	
						say	<u>11190.00</u>	
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	9100.00	460824.00	M-081

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Coarse sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
			Loader (capacity 1 cum)	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	300L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
			Formwork @ 3 per cent of (a+b+c)				23335.95	
			d) GST (multiplying factor 0.2016) on (a+b+c)				161522.08	
			e) Overhead charges @ 20 % on (a+b+c+d)				192544.57	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				115526.74	
			g) Cess @ 1% on (a+b+c+d+e+f)				12707.94	
			cost of 120 cum = a+b+c+d+e+f+g				1283502.12	
			Rate per cum = (a+b+c+d+e+f+g)/120				10695.85	
						say	<u>10696.00</u>	
		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	9100.00	475020.00	M-081
			Coarse Sand	cum	54.000	650.00	35100.00	M-004
			20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
			10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
			Admixture	kg	206.000	64.00	13184.00	M-180
			b) Labour					
			Mate	day	0.840	551.00	462.84	L-12
			Mason	day	3.000	593.00	1779.00	L-11
			Mazdoor	day	18.000	424.00	7632.00	L-13
			c) Machinery					
			Batching Plant	hour	6.00	3200.00	19200.00	P&M-002
			Generator 100 KVA	hour	6.000	938.00	5628.00	P&M-080
			Loader 1 cum capacity	hour	6.000	1838.00	11028.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1265.00	18975.00	P&M-049
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne. km	300.L	80.00	0.00	P&M-050 Lead= 0 km
			Concrete Pump	hour	6.000	2726.00	16356.00	P&M-007
			Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				24157.35	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) GST (multiplying factor 0.2016) on (a+b+c)				167207.48	
		e) Overhead charges @ 20 % on (a+b+c+d)				199321.93	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				119593.16	
		g) Cess @ 1% on (a+b+c+d+e+f)				13155.25	
		cost of 120 cum = a+b+c+d+e+f+g				1328680.01	
		Rate per cum = (a+b+c+d+e+f+g)/120				11072.33	
					say	<u>11072.00</u>	
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	551.00	66.12	L-12
		Sinker (skilled)	day	1.000	508.00	508.00	L-15
		Sinking helper (semi-skilled)	day	2.000	424.00	848.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	2.000	1040.00	2080.00	P&M-075
		Consumables in sinking @10 per cent of (b)				208.00	
		c) GST (multiplying factor 0.2016) on (a+b)				747.96	
		d) Overhead charges @ 20 % on (a+b+c)				891.62	
		e) Contractor's profit @ 10 % on (a+b+c+d)				534.97	
		f) Cess @ 1% on (a+b+c+d+e)				58.85	
		Rate per metre = (a+b+c+d+e+f)				5943.52	
					say	<u>5944.00</u>	
12.12 A	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking = 0.33 m per hour.					
		a) Labour					
		Mate	day	0.150	551.00	82.65	L-12
		Sinker	day	1.250	508.00	635.00	L-15
		Sinking helper (semi-skilled)	day	2.500	424.00	1060.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.000	1040.00	3120.00	P&M-075
		Consumables in sinking @10 per cent of (b)				312.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1050.27	
		d) Overhead charges @ 20 % on (a+b+c)				1251.98	
		e) Contractor's profit @ 10 % on (a+b+c+d)				751.19	
		f) Cess @ 1% on (a+b+c+d+e)				82.63	
		Rate per metre = (a+b+c+d+e+f)				8345.72	
					say	<u>8346.00</u>	
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%	8763.000			
		12th m	5%	9201.000			
		13th m	5%	9661.000			
		14th m	5%	10144.000			
		15th m	5%	10651.000			
		16th m	5%	11184.000			

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		17th m	5%	11743.000			
		18th m	5%	12330.000			
		19th m	5%	12947.000			
		20th m	5%	13594.000			
		Total Cost from 10m upto 20m		110218.000			
		Avg Rate per metre		11022.000			
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%	14614.000	17537.00		
		22nd m	7.5%	15710.000	18852.00		
		23rd m	7.5%	16888.000	20266.00		
		24th m	7.5%	18155.000	21786.00		
		25th m	7.5%	19517.000	23420.00		
		26th m	7.5%	20981.000	25177.00		
		27th m	7.5%	22555.000	27066.00		
		28th m	7.5%	24247.000	29096.00		
		29th m	7.5%	26066.000	31279.00		
		30th m	7.5%	28021.000	33625.00		
		Total Cost from 20m upto 30m		206754.000	248104.00		
		Avg Rate per metre		20675.000	24810.00		
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%	30823.000	36988.00		
		32nd m	10%	33905.000	40686.00		
		33rd m	10%	37296.000	44755.00		
		34th m	10%	41026.000	49231.00		
		35th m	10%	45129.000	54155.00		
		36th m	10%	49642.000	59570.00		
		37th m	10%	54606.000	65527.00		
		38th m	10%	60067.000	72080.00		
		39th m	10%	66074.000	79289.00		
		40th m	10%	72681.000	87217.00		
		Total Cost from 30m upto 40m		491249.000	589498.00		
		Avg Rate per metre		49125.000	58950.00		
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	551.00	82.65	L-12
		Sinker (skilled)	day	1.500	508.00	762.00	L-15
		Sinking helper (semi-skilled)	day	2.250	424.00	954.00	L-14
	b)	Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.000	1040.00	3120.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				312.00	
	c)	GST (multiplying factor 0.2016) on (a+b)				1054.50	
	d)	Overhead charges @ 20 % on (a+b+c)				1257.03	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				754.22	

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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)				82.96	
		Rate per metre = (a+b+c+d+e+f)				8379.36	
					say	<u>8379.00</u>	
12.12 B		(ii) Beyond 3m upto 10m depth					
		Rate of sinking = 0.17 m per hour.					
		a) Labour					
		Mate	day	0.300	551.00	165.30	L-12
		Sinker	day	3.000	508.00	1524.00	L-15
		Sinking helper (semi-skilled)	day	4.500	424.00	1908.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	2.000	723.00	1446.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				768.60	
		c) GST (multiplying factor 0.2016) on (a+b)				2429.66	
		d) Overhead charges @ 20 % on (a+b+c)				2896.31	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1737.79	
		f) Cess @ 1% on (a+b+c+d+e)				191.16	
		Rate per metre = (a+b+c+d+e+f)				19306.82	
					say	<u>19307.00</u>	
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%	20272.000	21286.00		
		12th m	5%	21286.000	22350.00		
		13th m	5%	22350.000	23468.00		
		14th m	5%	23468.000	24641.00		
		15th m	5%	24641.000	25873.00		
		16th m	5%	25873.000	27167.00		
		17th m	5%	27167.000	28525.00		
		18th m	5%	28525.000	29951.00		
		19th m	5%	29951.000	31449.00		
		20th m	5%	31449.000	33021.00		
		Total Cost from 10m upto 20m		254982.000	267731.00		
		Avg Rate per metre			<u>25498.000</u>	<u>26773.00</u>	
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%	33808.000	42260.00	44373.00	
		22nd m	7.5%	36344.000	45430.00	47702.00	
		23rd m	7.5%	39070.000	48838.00	51280.00	
		24th m	7.5%	42000.000	52500.00	55125.00	
		25th m	7.5%	45150.000	56438.00	59260.00	
		26th m	7.5%	48536.000	60670.00	63704.00	
		27th m	7.5%	52176.000	65220.00	68481.00	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		28th m	7.5%	56089.000	70111.00	73617.00	
		29th m	7.5%	60296.000	75370.00	79139.00	
		30th m	7.5%	64818.000	81023.00	85074.00	
		Total Cost from 20m upto 30m		478287.000	597860.00	627755.00	
		Avg Rate per metre		<u>47829.000</u>	<u>59786.00</u>	<u>62776.00</u>	
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%	71300.000	85560.00	89838.00	
		32nd m	10%	78430.000	94116.00	98822.00	
		33rd m	10%	86273.000	103528.00	108704.00	
		34th m	10%	94900.000	113880.00	119574.00	
		35th m	10%	104390.000	125268.00	131531.00	
		36th m	10%	114829.000	137795.00	144685.00	
		37th m	10%	126312.000	151574.00	159153.00	
		38th m	10%	138943.000	166732.00	175069.00	
		39th m	10%	152837.000	183404.00	192574.00	
		40th m	10%	168121.000	201745.00	211832.00	
		Total Cost from 30m upto 40m		1136335.000	1363602.00	1431782.00	
		Avg Rate per metre		<u>113634.000</u>	<u>136360.00</u>	<u>143178.00</u>	
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	551.00	506.92	L-12
		Sinker (skilled)	day	3.000	508.00	1524.00	L-15
		Sinking helper (semi-skilled)	day	20.000	424.00	8480.00	L-14
		Diver	day	0.500	869.00	434.50	L-07
	b)	Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.000	1040.00	4160.00	P&M-075
		Air compressor with pneumatic breakers	hour	3.500	723.00	2530.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				669.05	
		Add for dewatering @ of 5 per cent of (a+b), if required				915.25	
	c)	GST (multiplying factor 0.2016) on (a+b)				3874.80	
	d)	Overhead charges @ 20 % on (a+b+c)				4619.00	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				2771.40	
	f)	Cess @ 1% on (a+b+c+d+e)				304.85	
		Rate per metre = (a+b+c+d+e+f)				30790.27	
					say	<u>30790.00</u>	
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	166.00	664.00	M-104

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Electric Detonators	each	18.000	11.59	208.62	M-094/100
		b) Labour					
		Mate	day	1.560	551.00	859.56	L-12
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		Mazdoor	day	12.000	424.00	5088.00	L-13
		Mazdoor (Skilled)	day	4.000	508.00	2032.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.000	723.00	1446.00	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				845.27	
		Consumables in sinking @ 10 per cent of cost of (b).				768.60	
		d) GST (multiplying factor 0.2016) on (a+b+c)				3909.39	
		e) Overhead charges @ 20 % on (a+b+c+d)				4660.24	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				2796.14	
		g) Cess @ 1% on (a+b+c+d+e+f)				307.58	
		Rate per metre = (a+b+c+d+e+f+g)				31065.15	
					say	31065.00	
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	551.00	82.65	L-12
		Sinker (skilled)	day	1.250	508.00	635.00	L-15
		Sinking helper (semi-skilled)	day	2.500	424.00	1060.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	3.250	1040.00	3380.00	P&M-075
		Consumables in sinking @10 per cent of (b)				338.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1107.92	
		d) Overhead charges @ 20 % on (a+b+c)				1320.71	
		e) Contractor's profit @ 10 % on (a+b+c+d)				792.43	
		f) Cess @ 1% on (a+b+c+d+e)				87.17	
		Rate per metre = (a+b+c+d+e+f)				8803.88	
					say	8804.00	
12.13 A		(ii) Beyond 3m upto 10m depth					
		Rate of sinking = 0.22 m per hour.					
		a) Labour					
		Mate	day	0.180	551.00	99.18	L-12
		Sinker	day	1.500	508.00	762.00	L-15
		Sinking helper (semi-skilled)	day	3.000	424.00	1272.00	L-14
		b) Machinery					

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.500	1040.00	4680.00	P&M-075
		Consumables in sinking @10 per cent of (b)				468.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1467.89	
		d) Overhead charges @ 20 % on (a+b+c)				1749.81	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1049.89	
		f) Cess @ 1% on (a+b+c+d+e)				115.49	
		Rate per metre = (a+b+c+d+e+f)				11664.26	
					say	<u>11664.00</u>	
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					
	0.165	11th m	5%	12247.000			
		12th m	5%	12859.000			
		13th m	5%	13502.000			
		14th m	5%	14177.000			
		15th m	5%	14886.000			
		16th m	5%	15630.000			
		17th m	5%	16412.000			
		18th m	5%	17233.000			
		19th m	5%	18095.000			
		20th m	5%	19000.000			
		Total Cost from 10m upto 20m		154041.000			
		Avg Rate per metre		<u>15404.000</u>			
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%	20425.000	24510.00		
		22nd m	7.5%	21957.000	26348.00		
		23rd m	7.5%	23604.000	28325.00		
		24th m	7.5%	25374.000	30449.00		
		25th m	7.5%	27277.000	32732.00		
		26th m	7.5%	29323.000	35188.00		
		27th m	7.5%	31522.000	37826.00		
		28th m	7.5%	33886.000	40663.00		
		29th m	7.5%	36427.000	43712.00		
		30th m	7.5%	39159.000	46991.00		
		Total Cost from 20m upto 30m		288954.000	346744.00		
		Avg Rate per metre		<u>28895.000</u>	<u>34674.00</u>		
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%	43075.000	51690.00		
		32nd m	10%	47383.000	56860.00		
		33rd m	10%	52121.000	62545.00		
		34th m	10%	57333.000	68800.00		
		35th m	10%	63066.000	75679.00		
		36th m	10%	69373.000	83248.00		
		37th m	10%	76310.000	91572.00		
		38th m	10%	83941.000	100729.00		
		39th m	10%	92335.000	110802.00		

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		40th m	10%	101569.000	121883.00		
		Total Cost from 30m upto 40m		686506.000	823808.00		
		Avg Rate per metre		68651.000	82381.00		
12.13	B	Clayey Soil (7m dia. Well)					
		Unit = Running Meter.					
		Taking output = 1 cum					
	(I)	Depth below bed level upto 3.0 M					
		Rate of sinking = 0.22 m per hour.					
		a) Labour					
		Mate	day	0.180	551.00	99.18	L-12
		Sinker (skilled)	day	1.500	508.00	762.00	L-15
		Sinking helper (semi-skilled)	day	3.000	424.00	1272.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.500	1040.00	4680.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				468.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1467.89	
		d) Overhead charges @ 20 % on (a+b+c)				1749.81	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1049.89	
		f) Cess @ 1% on (a+b+c+d+e)				115.49	
		Rate per metre = (a+b+c+d+e+f)				11664.26	
					say	11664.00	
12.13 B	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking = 0.17 m per hour.					
		a) Labour					
		Mate	day	0.260	551.00	143.26	L-12
		Sinker	day	2.000	508.00	1016.00	L-15
		Sinking helper (semi-skilled)	day	4.000	424.00	1696.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.250	723.00	624.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				686.40	
		c) GST (multiplying factor 0.2016) on (a+b)				2097.78	
		d) Overhead charges @ 20 % on (a+b+c)				2500.69	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1500.41	
		f) Cess @ 1% on (a+b+c+d+e)				165.05	
		Rate per metre = (a+b+c+d+e+f)				16669.59	
					say	16670.00	
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%	17503.000	18378.00		
		12th m	5%	18378.000	19297.00		
		13th m	5%	19297.000	20262.00		
		14th m	5%	20262.000	21275.00		
		15th m	5%	21275.000	22339.00		
		16th m	5%	22339.000	23456.00		
		17th m	5%	23456.000	24629.00		
		18th m	5%	24629.000	25860.00		
		19th m	5%	25860.000	27153.00		
		20th m	5%	27153.000	28511.00		

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Total Cost from 10m upto 20m		220152.000		231160.00	
		Avg Rate per metre		<u>22015.000</u>		<u>23116.00</u>	
12.13 B		(iv) Beyond 20m upto 30 m					
		a Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b Add 5 per cent of cost for dewatering on the cost, if required					
		c Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour			Including 25% for Kentledge	Including 5% for dewatering, if required	
		31st m	7.5%	29189.000	36486.00	38310.00	
		32nd m	7.5%	31378.000	39223.00	41184.00	
		33rd m	7.5%	33731.000	42164.00	44272.00	
		34th m	7.5%	36261.000	45326.00	47592.00	
		35th m	7.5%	38981.000	48726.00	51162.00	
		36th m	7.5%	41905.000	52381.00	55000.00	
		37th m	7.5%	45048.000	56310.00	59126.00	
		38th m	7.5%	48427.000	60534.00	63561.00	
		39th m	7.5%	52059.000	65074.00	68328.00	
		40th m	7.5%	55963.000	69954.00	73452.00	
		Total Cost from 30m upto 40m		412942.000	516178.00	541987.00	
		Avg Rate per metre		<u>41294.000</u>	<u>51618.00</u>	<u>54199.00</u>	
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%	61559.000	73871.00	77565.00	
		32nd m	10%	67715.000	81258.00	85321.00	
		33rd m	10%	74487.000	89384.00	93853.00	
		34th m	10%	81936.000	98323.00	103239.00	
		35th m	10%	90130.000	108156.00	113564.00	
		36th m	10%	99143.000	118972.00	124921.00	
		37th m	10%	109057.000	130868.00	137411.00	
		38th m	10%	119963.000	143956.00	151154.00	
		39th m	10%	131959.000	158351.00	166269.00	
		40th m	10%	145155.000	174186.00	182895.00	
		Total Cost from 30m upto 40m		981104.000	1177325.00	1236192.00	
		Avg Rate per metre		<u>98110.000</u>	<u>117733.00</u>	<u>123619.00</u>	
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	551.00	319.58	L-12
		Sinker (skilled)	day	4.000	508.00	2032.00	L-15
		Sinking helper (semi-skilled)	day	10.000	424.00	4240.00	L-14
		Diver	day	0.750	869.00	651.75	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.500	1040.00	4680.00	P&M-075
		Air compressor with pneumatic breakers	hour	3.750	723.00	2711.25	P&M-063

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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)				739.13	
		Add for dewatering @ of 5 per cent of (a+b), if required				768.69	
		c) GST (multiplying factor 0.2016) on (a+b)				3254.31	
		d) Overhead charges @ 20 % on (a+b+c)				3879.34	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2327.61	
		f) Cess @ 1% on (a+b+c+d+e)				256.04	
		Rate per metre = (a+b+c+d+e+f)				25859.70	
					say	<u>25860.00</u>	
12.13		D Hard Rock (7m dia well)					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 1 m</i>					
		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	166.00	1162.00	M-104
		Electric Detonators	each	30.000	11.59	347.70	M-094/100
		b) Labour					
		Mate	day	1.600	551.00	881.60	L-12
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		Mazdoor	day	18.000	424.00	7632.00	L-13
		Mazdoor (Skilled)	day	4.000	508.00	2032.00	L-15
		Diver	day	0.500	869.00	434.50	L-07
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.000	723.00	1446.00	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				995.29	
		Consumables in sinking @ 10 per cent of cost of (b).				868.13	
		d) GST (multiplying factor 0.2016) on (a+b+c)				4693.04	
		e) Overhead charges @ 20 % on (a+b+c+d)				5594.40	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				3356.64	
		g) Cess @ 1% on (a+b+c+d+e+f)				369.23	
		Rate per metre = (a+b+c+d+e+f+g)				37292.28	
					say	<u>37292.00</u>	
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.					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		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	551.00	99.18	L-12
		Sinker (skilled)	day	1.500	508.00	762.00	L-15
		Sinking helper (semi-skilled)	day	3.000	424.00	1272.00	L-14
		b) Machinery					

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.000	1040.00	4160.00	P&M-075
		Consumables in sinking @10 per cent of (b)				416.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1352.57	
		d) Overhead charges @ 20 % on (a+b+c)				1612.35	
		e) Contractor's profit @ 10 % on (a+b+c+d)				967.41	
		f) Cess @ 1% on (a+b+c+d+e)				106.42	
		Rate per metre = (a+b+c+d+e+f)				10747.93	
					say	<u>10748.00</u>	
12.14 A		(ii) Beyond 3m upto 10m depth					
		Rate of sinking @ 0.20 m/hour					
		a) Labour					
		Mate	day	0.250	551.00	137.75	L-12
		Sinker	day	1.750	508.00	889.00	L-15
		Sinking helper (semi-skilled)	day	3.500	424.00	1484.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.000	1040.00	5200.00	P&M-075
		Consumables in sinking @10 per cent of (b)				520.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1659.32	
		d) Overhead charges @ 20 % on (a+b+c)				1978.01	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1186.81	
		f) Cess @ 1% on (a+b+c+d+e)				130.55	
		Rate per metre = (a+b+c+d+e+f)				13185.44	
					say	<u>13185.00</u>	
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%	13845.000			
		12th m	5%	14537.000			
		13th m	5%	15264.000			
		14th m	5%	16027.000			
		15th m	5%	16828.000			
		16th m	5%	17669.000			
		17th m	5%	18552.000			
		18th m	5%	19480.000			
		19th m	5%	20454.000			
		20th m	5%	21477.000			
		Total Cost from 10m upto 20m		174133.000			
		Avg Rate per metre				<u>17413.000</u>	
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%	23088.000	27706.00		
		22nd m	7.5%	24820.000	29784.00		
		23rd m	7.5%	26682.000	32018.00		
		24th m	7.5%	28683.000	34420.00		
		25th m	7.5%	30834.000	37001.00		
		26th m	7.5%	33147.000	39776.00		
		27th m	7.5%	35633.000	42760.00		
		28th m	7.5%	38305.000	45966.00		
		29th m	7.5%	41178.000	49414.00		
		30th m	7.5%	44266.000	53119.00		

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Total Cost from 20m upto 30m		326636.000		391964.00	
		Avg Rate per metre		<u>32664.000</u>		<u>39196.00</u>	
12.14 A		(v) Beyond 30m upto 40 m					
		a Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour			Including 20% for Kentledge		
		31st m	10%	48693.000	58432.00		
		32nd m	10%	53562.000	64274.00		
		33rd m	10%	58918.000	70702.00		
		34th m	10%	64810.000	77772.00		
		35th m	10%	71291.000	85549.00		
		36th m	10%	78420.000	94104.00		
		37th m	10%	86262.000	103514.00		
		38th m	10%	94888.000	113866.00		
		39th m	10%	104377.000	125252.00		
		40th m	10%	114815.000	137778.00		
		Total Cost from 30m upto 40m		776036.000		931243.00	
		Avg Rate per metre		<u>77604.000</u>		<u>93124.00</u>	
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	551.00	121.22	L-12
		Sinker (skilled)	day	2.000	508.00	1016.00	L-15
		Sinking helper (semi-skilled)	hour	3.500	424.00	1484.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.		5.500	1040.00	5720.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				572.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1796.91	
		d) Overhead charges @ 20 % on (a+b+c)				2142.03	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1285.22	
		f) Cess @ 1% on (a+b+c+d+e)				141.37	
		Rate per metre = (a+b+c+d+e+f)				14278.75	
					say	<u>14279.00</u>	
12.14 B		(ii) Beyond 3m upto 10m depth					
		Rate of sinking @ 0.17 m/hour					
		a) Labour					
		Mate	day	0.320	551.00	176.32	L-12
		Sinker	day	2.500	508.00	1270.00	L-15
		Sinking helper (semi-skilled)	day	4.500	424.00	1908.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.500	723.00	2530.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				877.05	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		c) GST (multiplying factor 0.2016) on (a+b)				2621.18	
		d) Overhead charges @ 20 % on (a+b+c)				3124.61	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1874.77	
		f) Cess @ 1% on (a+b+c+d+e)				206.22	
		Rate per metre = (a+b+c+d+e+f)				20828.65	
					say	20829.00	
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%	21870.000	22964.00		
		12th m	5%	22964.000	24112.00		
		13th m	5%	24112.000	25318.00		
		14th m	5%	25318.000	26584.00		
		15th m	5%	26584.000	27913.00		
		16th m	5%	27913.000	29309.00		
		17th m	5%	29309.000	30774.00		
		18th m	5%	30774.000	32313.00		
		19th m	5%	32313.000	33929.00		
		20th m	5%	33929.000	35625.00		
		Total Cost from 10m upto 20m		275086.000	288841.00		
		Avg Rate per metre		27509.000	28884.00		
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%	36474.000	45593.00	47873.00	
		32nd m	7.5%	39210.000	49013.00	51464.00	
		33rd m	7.5%	42151.000	52689.00	55323.00	
		34th m	7.5%	45312.000	56640.00	59472.00	
		35th m	7.5%	48710.000	60888.00	63932.00	
		36th m	7.5%	52363.000	65454.00	68727.00	
		37th m	7.5%	56290.000	70363.00	73881.00	
		38th m	7.5%	60512.000	75640.00	79422.00	
		39th m	7.5%	65050.000	81313.00	85379.00	
		40th m	7.5%	69929.000	87411.00	91782.00	
		Total Cost from 30m upto 40m		516001.000	645004.00	677255.00	
		Avg Rate per metre		51600.000	64500.00	67726.00	
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%	76922.000	92306.00	96921.00	
		32nd m	10%	84614.000	101537.00	106614.00	
		33rd m	10%	93075.000	111690.00	117275.00	
		34th m	10%	102383.000	122860.00	129003.00	
		35th m	10%	112621.000	135145.00	141902.00	
		36th m	10%	123883.000	148660.00	156093.00	
		37th m	10%	136271.000	163525.00	171701.00	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		38th m	10%	149898.000	179878.00	188872.00	
		39th m	10%	164888.000	197866.00	207759.00	
		40th m	10%	181377.000	217652.00	228535.00	
		Total Cost from 30m upto 40m		1225932.000	1471119.00	1544675.00	
		Avg Rate per metre		<u>122593.000</u>	<u>147112.00</u>	<u>154468.00</u>	
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	551.00	374.68	L-12
		Sinker (skilled)	day	4.000	508.00	2032.00	L-15
		Sinking helper (semi-skilled)	day	12.000	424.00	5088.00	L-14
		Diver	day	1.000	869.00	869.00	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.000	1040.00	5200.00	P&M-075
		Air compressor with pneumatic breakers	hour	3.750	723.00	2711.25	P&M-063
		Consumables in sinking @ 10 per cent of (b)				791.13	
		Add for dewatering @ of 5 per cent of (a+b), if required				853.30	
		c) GST (multiplying factor 0.2016) on (a+b)				3612.54	
		d) Overhead charges @ 20 % on (a+b+c)				4306.38	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2583.83	
		f) Cess @ 1% on (a+b+c+d+e)				284.22	
		Rate per metre = (a+b+c+d+e+f)				28706.33	
					say	<u>28706.00</u>	
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	166.00	1328.00	M-104
		Electric Detonators	each	32.000	11.59	370.88	M-094/100
		b) Labour					
		Mate	day	1.090	551.00	600.59	L-12
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		Mazdoor	day	20.000	424.00	8480.00	L-13
		Mazdoor (Skilled)	day	4.000	508.00	2032.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.000	723.00	1446.00	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				1001.92	
		Consumables in sinking @ 10 per cent of cost of (b).				1235.23	
		d) GST (multiplying factor 0.2016) on (a+b+c)				4833.23	
		e) Overhead charges @ 20 % on (a+b+c+d)				5761.52	

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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)				3456.91	
		g) Cess @ 1% on (a+b+c+d+e+f)				380.26	
		Rate per metre = (a+b+c+d+e+f+g)				38406.29	
					say	<u>38406.00</u>	
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.					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		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	551.00	104.69	L-12
		Sinker (skilled)	day	1.500	508.00	762.00	L-15
		Sinking helper (semi-skilled)	day	3.250	424.00	1378.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.000	1040.00	4160.00	P&M-075
		Consumables in sinking @10 per cent of (b)					
						416.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1375.05	
		d) Overhead charges @ 20 % on (a+b+c)				1639.15	
		e) Contractor's profit @ 10 % on (a+b+c+d)				983.49	
		f) Cess @ 1% on (a+b+c+d+e)				108.18	
		Rate per metre = (a+b+c+d+e+f)				10926.56	
					say	<u>10927.00</u>	
12.15 A		(ii) Beyond 3m upto 10m depth					
		Rate of sinking @ 0.18 m/hour					
		a) Labour					
		Mate	day	0.270	551.00	148.77	L-12
		Sinker	day	1.750	508.00	889.00	L-15
		Sinking helper (semi-skilled)	day	4.000	424.00	1696.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.500	1040.00	5720.00	P&M-075
		Consumables in sinking @10 per cent of (b)					
						572.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1819.60	
		d) Overhead charges @ 20 % on (a+b+c)				2169.07	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1301.44	
		f) Cess @ 1% on (a+b+c+d+e)				143.16	
		Rate per metre = (a+b+c+d+e+f)				14459.04	
					say	<u>14459.00</u>	
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%	15182.000			
		12th m	5%	15941.000			
		13th m	5%	16738.000			
		14th m	5%	17575.000			
		15th m	5%	18454.000			
		16th m	5%	19377.000			
		17th m	5%	20346.000			
		18th m	5%	21363.000			
		19th m	5%	22431.000			

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		20th m	5%	23553.000			
		Total Cost from 10m upto 20m		190960.000			
		Avg Rate per metre		19096.000			
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					
		b Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.			Including 20% for Kentledge		
		21st m	7.5%	25319.475	30383.00		
		22nd m	7.5%	27218.000	32662.00		
		23rd m	7.5%	29259.000	35111.00		
		24th m	7.5%	31453.000	37744.00		
		25th m	7.5%	33812.000	40574.00		
		26th m	7.5%	36348.000	43618.00		
		27th m	7.5%	39074.000	46889.00		
		28th m	7.5%	42005.000	50406.00		
		29th m	7.5%	45155.000	54186.00		
		30th m	7.5%	48542.000	58250.00		
		Total Cost from 20m upto 30m		358185.475	429823.00		
		Avg Rate per metre		35819.000	42982.00		
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%	53396.200	64075.00		
		32nd m	10%	58736.000	70483.00		
		33rd m	10%	64610.000	77532.00		
		34th m	10%	71071.000	85285.00		
		35th m	10%	78178.000	93814.00		
		36th m	10%	85996.000	103195.00		
		37th m	10%	94596.000	113515.00		
		38th m	10%	104056.000	124867.00		
		39th m	10%	114462.000	137354.00		
		40th m	10%	125908.000	151090.00		
		Total Cost from 30m upto 40m		851009.200	1021210.00		
		Avg Rate per metre		85101.000	102121.00		
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	551.00	132.24	L-12
		Sinker (skilled)	day	2.250	508.00	1143.00	L-15
		Sinking helper (semi-skilled)	day	3.750	424.00	1590.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.750	1040.00	5980.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				598.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1903.76	
		d) Overhead charges @ 20 % on (a+b+c)				2269.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1361.64	
		f) Cess @ 1% on (a+b+c+d+e)				149.78	
		Rate per metre = (a+b+c+d+e+f)				15127.82	
					say	15128.00	

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.15 B		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking 0.15 m / hour					
		a)	Labour					
			Mate	day	0.340	551.00	187.34	L-12
			Sinker	day	2.500	508.00	1270.00	L-15
			Sinking helper (semi-skilled)	day	5.000	424.00	2120.00	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.500	1040.00	6760.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.750	723.00	2711.25	P&M-063
			Consumables in sinking @ 10 per cent of (b)				947.13	
		c)	GST (multiplying factor 0.2016) on (a+b)				2821.54	
		d)	Overhead charges @ 20 % on (a+b+c)				3363.45	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				2018.07	
		f)	Cess @ 1% on (a+b+c+d+e)				221.99	
			Rate per metre = (a+b+c+d+e+f)				22420.77	
						say	<u>22421.00</u>	
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%	23542.000	24719.00		
			12th m	5%	24719.000	25955.00		
			13th m	5%	25955.000	27253.00		
			14th m	5%	27253.000	28616.00		
			15th m	5%	28616.000	30047.00		
			16th m	5%	30047.000	31549.00		
			17th m	5%	31549.000	33126.00		
			18th m	5%	33126.000	34782.00		
			19th m	5%	34782.000	36521.00		
			20th m	5%	36521.000	38347.00		
			Total Cost from 10m upto 20m		296110.000	310915.00		
			Avg Rate per metre		<u>29611.000</u>	<u>31092.00</u>		
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%	39260.000	49075.00	51529.00	
			32nd m	7.5%	42205.000	52756.00	55394.00	
			33rd m	7.5%	45370.000	56713.00	59549.00	
			34th m	7.5%	48773.000	60966.00	64014.00	
			35th m	7.5%	52431.000	65539.00	68816.00	
			36th m	7.5%	56363.000	70454.00	73977.00	
			37th m	7.5%	60590.000	75738.00	79525.00	
			38th m	7.5%	65134.000	81418.00	85489.00	
			39th m	7.5%	70019.000	87524.00	91900.00	
			40th m	7.5%	75270.000	94088.00	98792.00	
			Total Cost from 30m upto 40m		555415.000	694271.00	728985.00	
			Avg Rate per metre		<u>55542.000</u>	<u>69427.00</u>	<u>72899.00</u>	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
12.15 B		(v) Beyond 30m upto 40 m					
		a Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b Add 5 per cent of cost for dewatering, if required					
		c Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).			Including 20% for Kentledge	Including 5% for dewatering, if required	
		31st m	10%	82797.000	99356.00	104324.00	
		32nd m	10%	91077.000	109292.00	114757.00	
		33rd m	10%	100185.000	120222.00	126233.00	
		34th m	10%	110204.000	132245.00	138857.00	
		35th m	10%	121224.000	145469.00	152742.00	
		36th m	10%	133346.000	160015.00	168016.00	
		37th m	10%	146681.000	176017.00	184818.00	
		38th m	10%	161349.000	193619.00	203300.00	
		39th m	10%	177484.000	212981.00	223630.00	
		40th m	10%	195232.000	234278.00	245992.00	
		Total Cost from 30m upto 40m		1319579.000	1583494.00	1662669.00	
		Avg Rate per metre		<u>131958.000</u>	<u>158349.00</u>	<u>166267.00</u>	
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	551.00	418.76	L-12
		Sinker (skilled)	day	4.000	508.00	2032.00	L-15
		Sinking helper (semi-skilled)	day	14.000	424.00	5936.00	L-14
		Diver	day	1.200	869.00	1042.80	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.500	1040.00	6760.00	P&M-075
		Air compressor with pneumatic breakers	hour	4.000	723.00	2892.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				965.20	
		Add for dewatering @ of 5 per cent of (a+b), if required				1002.34	
		c) GST (multiplying factor 0.2016) on (a+b)				4243.50	
		d) Overhead charges @ 20 % on (a+b+c)				5058.52	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3035.11	
		f) Cess @ 1% on (a+b+c+d+e)				333.86	
		Rate per metre = (a+b+c+d+e+f)				33720.09	
					say	<u>33720.00</u>	
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	166.00	1660.00	M-104
		Electric Detonators	each	40.000	11.59	463.60	M-094/100
		b) Labour					
		Mate	day	1.170	551.00	644.67	L-12
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		Mazdoor	day	22.000	424.00	9328.00	L-13
		Mazdoor (Skilled)	day	4.000	508.00	2032.00	L-15

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Diver	day	1.000	869.00	869.00	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.000	1040.00	7280.00	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.500	723.00	1807.50	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				1160.05	
			Consumables in sinking @ 10 per cent of cost of (b).				1411.34	
			d) GST (multiplying factor 0.2016) on (a+b+c)				5623.82	
			e) Overhead charges @ 20 % on (a+b+c+d)				6703.95	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				4022.37	
			g) Cess @ 1% on (a+b+c+d+e+f)				442.46	
			Rate per metre = (a+b+c+d+e+f+g)				44688.51	
						say	<u>44689.00</u>	
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	551.00	110.20	L-12
			Sinker (skilled)	day	1.500	508.00	762.00	L-15
			Sinking helper (semi-skilled)	day	3.500	424.00	1484.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.000	1040.00	5200.00	P&M-075
			Consumables in sinking @10 per cent of (b)				520.00	
			c) GST (multiplying factor 0.2016) on (a+b)				1628.16	
			d) Overhead charges @ 20 % on (a+b+c)				1940.87	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1164.52	
			f) Cess @ 1% on (a+b+c+d+e)				128.10	
			Rate per metre = (a+b+c+d+e+f)				12937.85	
						say	<u>12938.00</u>	
12.16 A		(ii)	Beyond 3m upto 10m depth					
			Rate of sinking 0.17 m / hour					
			a) Labour					
			Mate	day	0.310	551.00	170.81	L-12
			Sinker	day	2.000	508.00	1016.00	L-15
			Sinking helper (semi-skilled)	day	4.250	424.00	1802.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.750	1040.00	5980.00	P&M-075
			Consumables in sinking @10 per cent of (b)				598.00	
			c) GST (multiplying factor 0.2016) on (a+b)				1928.67	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) Overhead charges @ 20 % on (a+b+c)				2299.10	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1379.46	
		f) Cess @ 1% on (a+b+c+d+e)				151.74	
		Rate per metre = (a+b+c+d+e+f)				15325.78	
					say	<u>15326.00</u>	
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%	16092.000			
		12th m	5%	16897.000			
		13th m	5%	17742.000			
		14th m	5%	18629.000			
		15th m	5%	19560.000			
		16th m	5%	20538.000			
		17th m	5%	21565.000			
		18th m	5%	22643.000			
		19th m	5%	23775.000			
		20th m	5%	24964.000			
		Total Cost from 10m upto 20m		202405.000			
		Avg Rate per metre		<u>20241.000</u>			
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%	26836.000	32203.00		
		22nd m	7.5%	28849.000	34619.00		
		23rd m	7.5%	31013.000	37216.00		
		24th m	7.5%	33339.000	40007.00		
		25th m	7.5%	35839.000	43007.00		
		26th m	7.5%	38527.000	46232.00		
		27th m	7.5%	41417.000	49700.00		
		28th m	7.5%	44523.000	53428.00		
		29th m	7.5%	47862.000	57434.00		
		30th m	7.5%	51452.000	61742.00		
		Total Cost from 20m upto 30m		379657.000	455588.00		
		Avg Rate per metre		<u>37966.000</u>	<u>45559.00</u>		
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%	56597.000	67916.00		
		32nd m	10%	62257.000	74708.00		
		33rd m	10%	68483.000	82180.00		
		34th m	10%	75331.000	90397.00		
		35th m	10%	82864.000	99437.00		
		36th m	10%	91150.000	109380.00		
		37th m	10%	100265.000	120318.00		
		38th m	10%	110292.000	132350.00		
		39th m	10%	121321.000	145585.00		
		40th m	10%	133453.000	160144.00		
		Total Cost from 30m upto 40m		902013.000	1082415.00		
		Avg Rate per metre		<u>90201.000</u>	<u>108242.00</u>		
12.16		B Clayey Soil (10m dia. Well)					
		Unit = Running Meter					
		Taking output = 1 cum					
		(i) Depth below bed level upto 3.0 M					

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Rate of sinking 0.18m/hour.					
		a) Labour					
		Mate	day	0.250	551.00	137.75	L-12
		Sinker (skilled)	day	2.500	508.00	1270.00	L-15
		Sinking helper (semi-skilled)	day	5.500	424.00	2332.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				624.00	
		c) GST (multiplying factor 0.2016) on (a+b)				2137.72	
		d) Overhead charges @ 20 % on (a+b+c)				2548.29	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1528.98	
		f) Cess @ 1% on (a+b+c+d+e)				168.19	
		Rate per metre = (a+b+c+d+e+f)				16986.93	
					say	<u>16987.00</u>	
12.16 B		(ii) Beyond 3m upto 10m depth					
		Rate of sinking 0.15m/hour.					
		a) Labour					
		Mate	day	0.400	551.00	220.40	L-12
		Sinker	day	3.000	508.00	1524.00	L-15
		Sinking helper (semi-skilled)	day	5.500	424.00	2332.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.000	723.00	2892.00	P&M-063
		Consumables in sinking @ 10 per cent of (b)				913.20	
		c) GST (multiplying factor 0.2016) on (a+b)				2846.91	
		d) Overhead charges @ 20 % on (a+b+c)				3393.70	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2036.22	
		f) Cess @ 1% on (a+b+c+d+e)				223.98	
		Rate per metre = (a+b+c+d+e+f)				22622.41	
					say	<u>22622.00</u>	
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%	23754.000	24942.00		
		12th m	5%	24942.000	26189.00		
		13th m	5%	26189.000	27498.00		
		14th m	5%	27498.000	28873.00		
		15th m	5%	28873.000	30317.00		
		16th m	5%	30317.000	31833.00		
		17th m	5%	31833.000	33425.00		
		18th m	5%	33425.000	35096.00		
		19th m	5%	35096.000	36851.00		
		20th m	5%	36851.000	38694.00		
		Total Cost from 10m upto 20m		298778.000	313718.00		
		Avg Rate per metre			<u>29878.000</u>	<u>31372.00</u>	
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					

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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%	39615.000	49519.00	51995.00	
		32nd m	7.5%	42586.000	53233.00	55895.00	
		33rd m	7.5%	45780.000	57225.00	60086.00	
		34th m	7.5%	49214.000	61518.00	64594.00	
		35th m	7.5%	52905.000	66131.00	69438.00	
		36th m	7.5%	56873.000	71091.00	74646.00	
		37th m	7.5%	61138.000	76423.00	80244.00	
		38th m	7.5%	65723.000	82154.00	86262.00	
		39th m	7.5%	70652.000	88315.00	92731.00	
		40th m	7.5%	75951.000	94939.00	99686.00	
		Total Cost from 30m upto 40m		560437.000	700548.00	735577.00	
		Avg Rate per metre		56044.000	70055.00	73558.00	
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%	83546.000	100255.00	105268.00	
		32nd m	10%	91901.000	110281.00	115795.00	
		33rd m	10%	101091.000	121309.00	127374.45	
		34th m	10%	111200.000	133440.00	140112.00	
		35th m	10%	122320.000	146784.00	154123.20	
		36th m	10%	134552.000	161462.00	169535.10	
		37th m	10%	148007.000	177608.00	186488.40	
		38th m	10%	162808.000	195370.00	205138.50	
		39th m	10%	179089.000	214907.00	225652.35	
		40th m	10%	196998.000	236398.00	248217.90	
		Total Cost from 30m upto 40m		1331512.000	1597814.00	1677704.90	
		Avg Rate per metre		133151.000	159781.00	167770.00	
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	551.00	473.86	L-12
		Sinker (skilled)	day	4.000	508.00	2032.00	L-15
		Sinking helper (semi-skilled)	day	16.000	424.00	6784.00	L-14
		Diver	day	1.400	869.00	1216.60	L-07
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.000	1040.00	7280.00	P&M-075
		Air compressor with pneumatic breakers	hour	4.250	723.00	3072.75	P&M-063
		Consumables in sinking @ 10 per cent of (b)				1035.28	
		Add for dewatering @ 5 per cent of cost, if required				569.40	
		c) GST (multiplying factor 0.2016) on (a+b)				4528.72	
		d) Overhead charges @ 20 % on (a+b+c)				5398.52	

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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)				3239.11	
		f) Cess @ 1% on (a+b+c+d+e)				356.30	
		Rate per metre = (a+b+c+d+e+f)				35986.54	
					say	<u>35987.00</u>	
12.16		D Hard Rock (10m dia well)					
		<i>Unit = Running Meter.</i>					
		<i>Taking output = 1 m</i>					
		Depth in hard rock strata upto 3 m					
		Rate of sinking 0.12 m/ hour.					
		a) Material					
		Gelatine 80 per cent	Kg	11.000	166.00	1826.00	M-104
		Electric Detonators	each.	44.000	11.59	509.96	M-094/100
		b) Labour					
		Mate	day	1.270	551.00	699.77	L-12
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		Mazdoor	day	24.000	424.00	10176.00	L-13
		Mazdoor (Skilled)	day	4.000	508.00	2032.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.500	1040.00	8840.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.000	723.00	2169.00	P&M-063
		Dewatering @ 5 per cent of cost (c), if required.				550.45	
		Consumables in sinking @ 10 per cent of cost of (b+c).				2570.70	
		d) GST (multiplying factor 0.2016) on (a+b+c)				6171.71	
		e) Overhead charges @ 20 % on (a+b+c+d)				7357.07	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				4414.24	
		g) Cess @ 1% on (a+b+c+d+e+f)				485.57	
		Rate per metre = (a+b+c+d+e+f+g)				49042.22	
					say	<u>49042.00</u>	
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.					
		<i>Unit = Running Meter</i>					
		<i>Taking output = 0.50 m</i>					
		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	551.00	115.71	L-12
		Sinker (skilled)	day	1.500	508.00	762.00	L-15
		Sinking helper (semi-skilled)	day	3.300	424.00	1399.20	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Consumables in sinking @10 per cent of (b)				624.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1842.81	
		d) Overhead charges @ 20 % on (a+b+c)				2196.74	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1318.05	
		f) Cess @ 1% on (a+b+c+d+e)				144.99	
		Cost for 0.5m = a+b+c+d+e+f				14643.50	
		Rate per metre = (a+b+c+d+e+f)/0.50				29287.00	
					say	<u>29287.00</u>	

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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	551.00	176.32	L-12
		Sinker	day	2.000	508.00	1016.00	L-15
		Sinking helper (semi-skilled)	day	4.500	424.00	1908.00	L-14
		b) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.000	1040.00	4160.00	P&M-075
		Consumables in sinking @10 per cent of (b)				416.00	
		c) GST (multiplying factor 0.2016) on (a+b)				1547.55	
		d) Overhead charges @ 20 % on (a+b+c)				1844.77	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1106.86	
		f) Cess @ 1% on (a+b+c+d+e)				121.76	
		Cost for 0.5m = a+b+c+d+e+f				12297.26	
		Rate per metre = (a+b+c+d+e+f)/0.50				24594.52	
					say	<u>24595.00</u>	
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%	25824.000			
		12th m	5%	27115.000			
		13th m	5%	28471.000			
		14th m	5%	29895.000			
		15th m	5%	31390.000			
		16th m	5%	32960.000			
		17th m	5%	34608.000			
		18th m	5%	36338.000			
		19th m	5%	38155.000			
		20th m	5%	40063.000			
		Total Cost from 10m upto 20m		324819.000			
		Avg Rate per metre		<u>32482.000</u>			
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%	43068.000	51682.00		
		22nd m	7.5%	46298.000	55558.00		
		23rd m	7.5%	49770.000	59724.00		
		24th m	7.5%	53503.000	64204.00		
		25th m	7.5%	57516.000	69019.00		
		26th m	7.5%	61830.000	74196.00		
		27th m	7.5%	66467.000	79760.00		
		28th m	7.5%	71452.000	85742.00		
		29th m	7.5%	76811.000	92173.00		
		30th m	7.5%	82572.000	99086.00		
		Total Cost from 20m upto 30m		609287.000	731144.00		
		Avg Rate per metre		<u>60929.000</u>	<u>73114.00</u>		
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%	90829.000	108995.00		
		32nd m	10%	99912.000	119894.00		

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		33rd m	10%	109903.000	131884.00		
		34th m	10%	120893.000	145072.00		
		35th m	10%	132982.000	159578.00		
		36th m	10%	146280.000	175536.00		
		37th m	10%	160908.000	193090.00		
		38th m	10%	176999.000	212399.00		
		39th m	10%	194699.000	233639.00		
		40th m	10%	214169.000	257003.00		
		Total Cost from 30m upto 40m		1447574.000	1737090.00		
		Avg Rate per metre		<u>144757.000</u>	<u>173709.00</u>		
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	551.00	143.26	L-12
		Sinker (skilled)	day	2.500	508.00	1270.00	L-15
		Sinking helper (semi-skilled)	day	4.000	424.00	1696.00	L-14
	b)	Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.000	1040.00	5200.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				520.00	
	c)	GST (multiplying factor 0.2016) on (a+b)				1779.98	
	d)	Overhead charges @ 20 % on (a+b+c)				2121.85	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				1273.11	
	f)	Cess @ 1% on (a+b+c+d+e)				140.04	
		Cost for 0.5m = a+b+c+d+e+f				14144.24	
		Rate per metre = (a+b+c+d+e+f)/0.50				28288.48	
					say	<u>28288.00</u>	
12.17 B	(ii)	Beyond 3m upto 10m depth					
		Rate of sinking @ 0.08 m/hour					
	a)	Labour					
		Mate	day	0.430	551.00	236.93	L-12
		Sinker	day	3.500	508.00	1778.00	L-15
		Sinking helper (semi-skilled)	day	5.750	424.00	2438.00	L-14
	b)	Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.250	723.00	3072.75	P&M-063
		Consumables in sinking @ 10 per cent of (b)				931.28	
	c)	GST (multiplying factor 0.2016) on (a+b)				2962.91	
	d)	Overhead charges @ 20 % on (a+b+c)				3531.97	
	e)	Contractor's profit @ 10 % on (a+b+c+d)				2119.18	
	f)	Cess @ 1% on (a+b+c+d+e)				233.11	
		Cost for 0.5m = a+b+c+d+e+f				23544.13	
		Rate per metre = (a+b+c+d+e+f)/0.50				47088.26	
					say	<u>47088.00</u>	
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					

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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%	49443.000	51915.00		
		12th m	5%	51915.000	54511.00		
		13th m	5%	54511.000	57237.00		
		14th m	5%	57237.000	60099.00		
		15th m	5%	60099.000	63104.00		
		16th m	5%	63104.000	66259.00		
		17th m	5%	66259.000	69572.00		
		18th m	5%	69572.000	73051.00		
		19th m	5%	73051.000	76704.00		
		20th m	5%	76704.000	80539.00		
		Total Cost from 10m upto 20m		621895.000	652990.00		
		Avg Rate per metre		62190.000	65299.00		
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%	82457.000	103071.00	108225.00	
		32nd m	7.5%	88641.000	110801.00	116341.00	
		33rd m	7.5%	95289.000	119111.00	125067.00	
		34th m	7.5%	102436.000	128045.00	134447.00	
		35th m	7.5%	110119.000	137649.00	144531.00	
		36th m	7.5%	118378.000	147973.00	155372.00	
		37th m	7.5%	127256.000	159070.00	167024.00	
		38th m	7.5%	136800.000	171000.00	179550.00	
		39th m	7.5%	147060.000	183825.00	193016.00	
		40th m	7.5%	158090.000	197613.00	207494.00	
		Total Cost from 30m upto 40m		1166526.000	1458158.00	1531066.00	
		Avg Rate per metre		116653.000	145816.00	153107.00	
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%	173899.000	208679.00	219113.00	
		32nd m	10%	191289.000	229547.00	241024.00	
		33rd m	10%	210418.000	252502.00	265127.00	
		34th m	10%	231460.000	277752.00	291640.00	
		35th m	10%	254606.000	305527.00	320803.00	
		36th m	10%	280067.000	336080.00	352884.00	
		37th m	10%	308074.000	369689.00	388173.00	
		38th m	10%	338881.000	406657.00	426990.00	
		39th m	10%	372769.000	447323.00	469689.00	
		40th m	10%	410046.000	492055.00	516658.00	
		Total Cost from 30m upto 40m		2771509.000	3325811	3492101	
		Avg Rate per metre		277151.000	332581.00	349210.00	
12.17		C Soft Rock (11m dia well)					
		Unit = Running Meter.					
		Taking output = 0.50 m					

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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	551.00	523.45	L-12
		Sinker (skilled)	day	4.250	508.00	2159.00	L-15
		Sinking helper (semi-skilled)	day	18.000	424.00	7632.00	L-14
		Diver	day	1.500	869.00	1303.50	L-07
b) Machinery							
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.000	1040.00	8320.00	P&M-075
		Air compressor with pneumatic breakers	hour	4.500	723.00	3253.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				1157.35	
		Add for dewatering @ 5 per cent of cost, if required				636.54	
		c) GST (multiplying factor 0.2016) on (a+b)				5037.04	
		d) Overhead charges @ 20 % on (a+b+c)				6004.48	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3602.69	
		f) Cess @ 1% on (a+b+c+d+e)				396.30	
		Cost for 0.5m = a+b+c+d+e+f				40025.85	
		Rate per metre = (a+b+c+d+e+f)/0.50				80051.70	
					say	80052.00	
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	166.00	1992.00	M-104
		Electric Detonators	each.	48.000	11.59	556.32	M-094/100
b) Labour							
		Mate	day	1.350	551.00	743.85	L-12
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		Mazdoor	day	26.000	424.00	11024.00	L-13
		Mazdoor (Skilled)	day	4.000	508.00	2032.00	L-15
c) Machinery							
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.000	1040.00	10400.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.500	723.00	2530.50	P&M-063
		Dewatering @ 5 per cent of cost (c), if required.				646.53	
		Consumables in sinking @ 10 per cent of cost of (b+c).				2797.01	
		d) GST (multiplying factor 0.2016) on (a+b+c)				6846.73	
		e) Overhead charges @ 20 % on (a+b+c+d)				8161.74	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				4897.04	
		g) Cess @ 1% on (a+b+c+d+e+f)				538.67	
		Cost for 0.5m = a+b+c+d+e+f+g				54406.14	
		Rate per metre = (a+b+c+d)/0.50				108812.28	
					say	108812.00	
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.					

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FOUNDATIONS

Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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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	551.00	121.22	L-12
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Sinker (skilled)	day	1.750	508.00	889.00	L-15
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Sinking helper (semi-skilled)	day	4.000	424.00	1696.00	L-14
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b) Machinery

Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.000	1040.00	6240.00	P&M-075
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Consumables in sinking @10 per cent of (b)				624.00	
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c) GST (multiplying factor 0.2016) on (a+b)				1929.36	
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d) Overhead charges @ 20 % on (a+b+c)				2299.92	
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e) Contractor's profit @ 10 % on (a+b+c+d)				1379.95	
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f) Cess @ 1% on (a+b+c+d+e)				151.79	
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Cost for 0.25m = a+b+c+d+e+f				15331.24	
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Rate per metre = (a+b+c+d+e+f)/0.25				61324.96	
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say 61325.00

12.18 A

(ii) Beyond 3m upto 10m depth

Rate of sinking @ 0.038 m/hour

a) Labour

Mate	day	0.370	551.00	203.87	L-12
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Sinker	day	2.500	508.00	1270.00	L-15
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Sinking helper (semi-skilled)	day	4.750	424.00	2014.00	L-14
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b) Machinery

Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.500	1040.00	6760.00	P&M-075
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Consumables in sinking @10 per cent of (b)				676.00	
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c) GST (multiplying factor 0.2016) on (a+b)				2202.25	
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d) Overhead charges @ 20 % on (a+b+c)				2625.22	
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e) Contractor's profit @ 10 % on (a+b+c+d)				1575.13	
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f) Cess @ 1% on (a+b+c+d+e)				173.26	
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Cost for 0.25m = a+b+c+d+e+f				17499.73	
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Rate per metre = (a+b+c+d+e+f)/0.25				69998.92	
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say 69999.00

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%	73499.000
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12th m	5%	77174.000
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13th m	5%	81032.700
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14th m	5%	85084.335
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15th m	5%	89338.552
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16th m	5%	93805.480
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17th m	5%	98495.754
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18th m	5%	103420.542
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19th m	5%	108591.569
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20th m	5%	114021.147
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Total Cost from 10m upto 20m		924463.079
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Avg Rate per metre		92446.000
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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%	122573.000	147088.00		
			22nd m	7.5%	131766.000	158119.00		
			23rd m	7.5%	141648.000	169978.00		
			24th m	7.5%	152272.000	182726.00		
			25th m	7.5%	163692.000	196430.00		
			26th m	7.5%	175969.000	211163.00		
			27th m	7.5%	189167.000	227000.00		
			28th m	7.5%	203355.000	244026.00		
			29th m	7.5%	218607.000	262328.00		
			30th m	7.5%	235003.000	282004.00		
			Total Cost from 20m upto 30m		1734052.000	2080862.00		
			Avg Rate per metre		173405.000	208086.00		
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%	258503.000	310204.00		
			32nd m	10%	284353.000	341224.00		
			33rd m	10%	312788.000	375346.00		
			34th m	10%	344067.000	412880.00		
			35th m	10%	378474.000	454169.00		
			36th m	10%	416321.000	499585.00		
			37th m	10%	457953.000	549544.00		
			38th m	10%	503748.000	604498.00		
			39th m	10%	554123.000	664948.00		
			40th m	10%	609535.000	731442.00		
			Total Cost from 30m upto 40m		4119865.000	4943840		
			Avg Rate per metre		411987.000	494384.00		
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	551.00	165.30	L-12
			Sinker (skilled)	day	3.000	508.00	1524.00	L-15
			Sinking helper (semi-skilled)	day	4.500	424.00	1908.00	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.250	1040.00	6500.00	P&M-075
			Consumables in sinking @ 10 per cent of (b)				650.00	
		c)	GST (multiplying factor 0.2016) on (a+b)				2166.66	
		d)	Overhead charges @ 20 % on (a+b+c)				2582.79	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				1549.68	
		f)	Cess @ 1% on (a+b+c+d+e)				170.46	
			Cost for 0.25m = a+b+c+d+e+f				17216.89	
			Rate per metre = (a+b+c+d+e+f)/0.25				68867.56	
						say	68868.00	

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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	551.00	264.48	L-12
			Sinker	day	3.750	508.00	1905.00	L-15
			Sinking helper (semi-skilled)	day	6.000	424.00	2544.00	L-14
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.330	1040.00	8663.20	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.500	723.00	3253.50	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1191.67	
		c)	GST (multiplying factor 0.2016) on (a+b)				3592.88	
		d)	Overhead charges @ 20 % on (a+b+c)				4282.95	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				2569.77	
		f)	Cess @ 1% on (a+b+c+d+e)				282.67	
			Cost for 0.25m = a+b+c+d+e+f				28550.12	
			Rate per metre = (a+b+c+d+e+f)/0.25				114200.48	
						say	<u>114200.00</u>	
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%	119911.000	125907.00		
			12th m	5%	125907.000	132202.00		
			13th m	5%	132202.000	138812.00		
			14th m	5%	138812.000	145753.00		
			15th m	5%	145753.000	153041.00		
			16th m	5%	153041.000	160693.00		
			17th m	5%	160693.000	168728.00		
			18th m	5%	168728.000	177164.00		
			19th m	5%	177164.000	186022.00		
			20th m	5%	186022.000	195323.00		
			Total Cost from 10m upto 20m		1508233.000	1583645.00		
			Avg Rate per metre		<u>150823.000</u>	<u>158365.00</u>		
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%	199974.000	249968.00	262466.00	
			32nd m	7.5%	214972.000	268715.00	282151.00	
			33rd m	7.5%	231095.000	288869.00	303312.00	
			34th m	7.5%	248427.000	310534.00	326061.00	
			35th m	7.5%	267059.000	333824.00	350515.00	
			36th m	7.5%	287088.000	358860.00	376803.00	
			37th m	7.5%	308620.000	385775.00	405064.00	
			38th m	7.5%	331767.000	414709.00	435444.00	
			39th m	7.5%	356650.000	445813.00	468104.00	
			40th m	7.5%	383399.000	479249.00	503211.00	
			Total Cost from 30m upto 40m		2829051.000	3536316	3713131	
			Avg Rate per metre		<u>282905.000</u>	<u>353632.00</u>	<u>371313.00</u>	

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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%	421739.000	506087.00	531391.00	
			32nd m	10%	463913.000	556696.00	584531.00	
			33rd m	10%	510304.000	612365.00	642983.00	
			34th m	10%	561334.000	673601.00	707281.00	
			35th m	10%	617467.000	740960.00	778008.00	
			36th m	10%	679214.000	815057.00	855810.00	
			37th m	10%	747135.000	896562.00	941390.00	
			38th m	10%	821849.000	986219.00	1035530.00	
			39th m	10%	904034.000	1084841.00	1139083.00	
			40th m	10%	994437.000	1193324.00	1252990.00	
			Total Cost from 30m upto 40m		6721426.000	8065712	8468997	
			Avg Rate per metre		672143.000	806571.00	846900.00	
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	551.00	584.06	L-12
			Sinker (skilled)	day	4.500	508.00	2286.00	L-15
			Sinking helper (semi-skilled)	day	20.000	424.00	8480.00	L-14
			Diver	day	1.750	869.00	1520.75	L-07
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.000	1040.00	10400.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.750	723.00	3434.25	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1383.43	
			Add for dewatering @ 5 per cent, if required				760.88	
		c)	GST (multiplying factor 0.2016) on (a+b)				5816.03	
		d)	Overhead charges @ 20 % on (a+b+c)				6933.08	
		e)	Contractor's profit @ 10 % on (a+b+c+d)				4159.85	
		f)	Cess @ 1% on (a+b+c+d+e)				457.58	
			Cost for 0.25m = a+b+c+d+e+f				46215.91	
			Rate per metre = (a+b+c+d+e+f)/0.25				184863.64	
						say	184864.00	
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	166.00	2324.00	M-104
			Electric detonator	each.	56.000	11.59	649.04	M-094/100
		b)	Labour					
			Mate	day	1.440	551.00	793.44	L-12

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Driller	day	2.000	551.00	1102.00	L-06
			Blaster	day	0.250	551.00	137.75	L-03
			Mazdoor	day	28.000	424.00	11872.00	L-13
			Mazdoor (Skilled)	day	4.500	508.00	2286.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	12.500	1040.00	13000.00	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	4.000	723.00	2892.00	P&M-063
			Dewatering @ 5 per cent, if				794.60	
			Consumables in sinking @ 10 per cent of (c).				1668.66	
			d) GST (multiplying factor 0.2016) on (a+b+c)				7563.93	
			e) Overhead charges @ 20 % on (a+b+c+d)				9016.68	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				5410.01	
			g) Cess @ 1% on (a+b+c+d+e+f)				595.10	
			Cost for 0.25m = a+b+c+d+e+f+g				60105.21	
			Rate per metre = (a+b+c+d+e+f+g)/0.25				240420.84	
							say 240421.00	
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	551.00	110.20	L-12
			Sinker (skilled)	day	1.250	508.00	635.00	L-15
			Sinking helper (semi-skilled)	day	3.750	424.00	1590.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.500	1040.00	5720.00	P&M-075
			Consumables in sinking @10 per cent of (b)				572.00	
			c) GST (multiplying factor 0.2016) on (a+b)				1739.24	
			d) Overhead charges @ 20 % on (a+b+c)				2073.29	
			e) Contractor's profit @ 10 % on (a+b+c+d)				1243.97	
			f) Cess @ 1% on (a+b+c+d+e)				136.84	
			Rate per metre = (a+b+c+d+e+f)				13820.54	
							say 13821.00	
12.19 A			(ii) Beyond 3m upto 10m depth					
			Rate of sinking @ 0.17 m/hour					
			a) Labour					
			Mate	day	0.300	551.00	165.30	L-12
			Sinker	day	1.500	508.00	762.00	L-15
			Sinking helper (semi-skilled)	day	4.000	424.00	1696.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.880	1040.00	6115.20	P&M-075

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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)				611.52	
		c) GST (multiplying factor 0.2016) on (a+b)				1884.96	
		d) Overhead charges @ 20 % on (a+b+c)				2247.00	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1348.20	
		f) Cess @ 1% on (a+b+c+d+e)				148.30	
		Rate per metre = (a+b+c+d+e+f)				14978.48	
					say	<u>14978.00</u>	
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%	15727.000			
		12th m	5%	16513.000			
		13th m	5%	17339.000			
		14th m	5%	18206.000			
		15th m	5%	19116.000			
		16th m	5%	20072.000			
		17th m	5%	21076.000			
		18th m	5%	22130.000			
		19th m	5%	23237.000			
		20th m	5%	24399.000			
		Total Cost from 10m upto 20m		197815.000			
		Avg Rate per metre				<u>19782.000</u>	
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%	26229.000	31475.00		
		22nd m	7.5%	28196.000	33835.00		
		23rd m	7.5%	30311.000	36373.00		
		24th m	7.5%	32584.000	39101.00		
		25th m	7.5%	35028.000	42034.00		
		26th m	7.5%	37655.000	45186.00		
		27th m	7.5%	40479.000	48575.00		
		28th m	7.5%	43515.000	52218.00		
		29th m	7.5%	46779.000	56135.00		
		30th m	7.5%	50287.000	60344.00		
		Total Cost from 20m upto 30m		371063.000	445276.00		
		Avg Rate per metre				<u>37106.000</u>	<u>44528.00</u>
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%	55316.000	66379.00		
		32nd m	10%	60848.000	73018.00		
		33rd m	10%	66933.000	80320.00		
		34th m	10%	73626.000	88351.00		
		35th m	10%	80989.000	97187.00		
		36th m	10%	89088.000	106906.00		
		37th m	10%	97997.000	117596.00		
		38th m	10%	107797.000	129356.00		
		39th m	10%	118577.000	142292.00		
		40th m	10%	130435.000	156522.00		
		Total Cost from 30m upto 40m		881606.000	1057927.00		
		Avg Rate per metre				<u>88161.000</u>	<u>105793.00</u>
12.19		B Clayey Soil (Twin D Type Well)					
		Unit = Running Meter					
		Taking output = 1 meter					

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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	551.00	143.26	L-12
		Sinker (skilled)	day	2.500	508.00	1270.00	L-15
		Sinking helper (semi-skilled)	day	4.000	424.00	1696.00	L-14
b) Machinery							
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.250	1040.00	6500.00	P&M-075
		Consumables in sinking @ 10 per cent of (b)				650.00	
		c) GST (multiplying factor 0.2016) on (a+b)				2068.27	
		d) Overhead charges @ 20 % on (a+b+c)				2465.51	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1479.30	
		f) Cess @ 1% on (a+b+c+d+e)				162.72	
		Rate per metre = (a+b+c+d+e+f)				16435.06	
					say	<u>16435.00</u>	
12.19 B		(ii) Beyond 3m upto 10m depth					
Rate of sinking @ 0.15 m/hour							
a) Labour							
		Mate	day	0.450	551.00	247.95	L-12
		Sinker	day	3.250	508.00	1651.00	L-15
		Sinking helper (semi-skilled)	day	6.000	424.00	2544.00	L-14
b) Machinery							
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.670	1040.00	6936.80	P&M-075
		Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.500	723.00	3253.50	P&M-063
		Consumables in sinking @ 10 per cent of (b)				1019.03	
		c) GST (multiplying factor 0.2016) on (a+b)				3155.50	
		d) Overhead charges @ 20 % on (a+b+c)				3761.56	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2256.93	
		f) Cess @ 1% on (a+b+c+d+e)				248.26	
		Rate per metre = (a+b+c+d+e+f)				25074.53	
					say	<u>25075.00</u>	
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%	26328.000		27644.00	
		12th m	5%	27644.000		29026.00	
		13th m	5%	29026.000		30477.00	
		14th m	5%	30477.000		32001.00	
		15th m	5%	32001.000		33601.00	
		16th m	5%	33601.000		35281.00	
		17th m	5%	35281.000		37045.00	
		18th m	5%	37045.000		38897.00	
		19th m	5%	38897.000		40842.00	
		20th m	5%	40842.000		42884.00	
		Total Cost from 10m upto 20m		331142.000		347698.00	
		Avg Rate per metre			<u>33114.000</u>	<u>34770.00</u>	

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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%	43905.000	54881.00	57625.00	
			32nd m	7.5%	47198.000	58998.00	61948.00	
			33rd m	7.5%	50738.000	63423.00	66594.00	
			34th m	7.5%	54543.000	68179.00	71588.00	
			35th m	7.5%	58634.000	73293.00	76958.00	
			36th m	7.5%	63032.000	78790.00	82730.00	
			37th m	7.5%	67759.000	84699.00	88934.00	
			38th m	7.5%	72841.000	91051.00	95604.00	
			39th m	7.5%	78304.000	97880.00	102774.00	
			40th m	7.5%	84177.000	105221.00	110482.00	
			Total Cost from 30m upto 40m		621131.000	776415.00	815237.00	
			Avg Rate per metre		62113.000	77642.00	81524.00	
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%	92595.000	111114.00	116670.00	
			32nd m	10%	101855.000	122226.00	128337.00	
			33rd m	10%	112041.000	134449.00	141171.00	
			34th m	10%	123245.000	147894.00	155289.00	
			35th m	10%	135570.000	162684.00	170818.00	
			36th m	10%	149127.000	178952.00	187900.00	
			37th m	10%	164040.000	196848.00	206690.00	
			38th m	10%	180444.000	216533.00	227360.00	
			39th m	10%	198488.000	238186.00	250095.00	
			40th m	10%	218337.000	262004.00	275104.00	
			Total Cost from 30m upto 40m		1475742.000	1770890.00	1859434.00	
			Avg Rate per metre		147574.000	177089.00	185943.00	
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	551.00	473.86	L-12
			Sinker (skilled)	day	4.500	508.00	2286.00	L-15
			Sinking helper (semi-skilled)	day	15.000	424.00	6360.00	L-14
			Diver	day	1.500	869.00	1303.50	L-07
		b)	Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.330	1040.00	8663.20	P&M-075
			Air compressor with pneumatic breakers	hour	6.000	723.00	4338.00	P&M-063

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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)				1300.12	
		Add for dewatering @ 5 per cent, if required				715.07	
		c) GST (multiplying factor 0.2016) on (a+b)				5128.65	
		d) Overhead charges @ 20 % on (a+b+c)				6113.68	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3668.21	
		f) Cess @ 1% on (a+b+c+d+e)				403.50	
		Rate per metre = (a+b+c+d+e+f)				40753.79	
					say	<u>40754.00</u>	
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	166.00	1660.00	M-104
		Electric detonators	each.	40.000	11.59	463.60	M-094/100
		b) Labour					
		Mate	day	1.340	551.00	738.34	L-12
		Driller	day	2.000	551.00	1102.00	L-06
		Blaster	day	0.250	551.00	137.75	L-03
		Mazdoor	day	25.000	424.00	10600.00	L-13
		Mazdoor (Skilled)	day	4.250	508.00	2159.00	L-15
		c) Machinery					
		Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.000	1040.00	10400.00	P&M-075
		Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.000	723.00	2169.00	P&M-063
		Dewatering @ 5 per cent of cost of (b+c), if required.				1365.30	
		Consumables in sinking @ 10 per cent of (b).				1393.43	
		d) GST (multiplying factor 0.2016) on (a+b+c)				6489.19	
		e) Overhead charges @ 20 % on (a+b+c+d)				7735.52	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				4641.31	
		g) Cess @ 1% on (a+b+c+d+e+f)				510.54	
		Rate per metre = (a+b+c+d+e+f+g)				51564.98	
					say	<u>51565.00</u>	
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 platforms 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 clause 1207.6 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	10874.00	86992.00	Item 12.8 (H)

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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	67000.00	32160.00	M-082
		Blasting material					
		Gelatine 80 per cent	Kg	1.500	166.00	249.00	M-104
		Electric detonators	each	6.000	11.59	69.54	M-094/100
		b) Labour					
		Medical Officer	day	0.500	1490.00	745.00	L-16
		Para medical personnel	day	1.000	869.00	869.00	L-19
		Mate	day	1.860	551.00	1024.86	L-12
		Driller	day	1.000	551.00	551.00	L-06
		Blaster	day	0.500	551.00	275.50	L-03
		Mazdoor (for cutting, blasting, cleaning, removal of Material etc.)	day	30.000	424.00	12720.00	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	508.00	5080.00	L-15
		Diver	day	4.000	869.00	3476.00	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	5508.00	33048.00	P&M-038
		Air compressor 250 cfm, 2 nos.	hour	2 x 6	658.00	7896.00	P&M-001
		Hire and running charges of crane of 15 tonne capacity	hour	6.000	902.00	5412.00	P&M-072
		Motorised barge of 20 tonne capacity	hour	6.000	2278.00	13668.00	P&M-066
		Boat to carry atleast 20 persons	hour	6.000	2278.00	13668.00	P&M-066
		Electric generating set 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Tipper 10 tonne capacity	hour	6.000	916.00	5496.00	P&M-048
		d) GST (multiplying factor 0.2016) on (a+b+c)				76495.89	
		e) Overhead charges @ 20 % on (a+b+c+d)				91187.96	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				54712.78	
		g) Cess @ 1% on (a+b+c+d+e+f)				6018.41	
		Cost for 5 cum = a+b+c+d+e+f+g (see notes below)				694850.94	
		Rate per cum = (a+b+c+d+e+f+g)/5				138970.19	
					say	<u>138970.00</u>	

- 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.

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<p>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.</p> <p>7.Depth of sinking shall be restricted to 30 m.</p>					
12.21	1207	<p>Sand Filling in Wells complete as per Drawing and Technical Specifications.</p> <p><i>Unit = 1 cum</i> <i>Taking output = 1 cum</i></p> <p>a) Material</p> <p>Sand (assuming 20 per cent voids) cum 1.200 650.00 780.00 M-006</p> <p>b) Labour</p> <p>Mate day 0.010 551.00 5.51 L-12</p> <p>Mazdoor day 0.300 424.00 127.20 L-13</p> <p>c) GST (multiplying factor 0.2016) on (a+b) 184.00</p> <p>d) Overhead charges @ 20 % on (a+b+c) 219.34</p> <p>e) Contractor's profit @ 10 % on (a+b+c+d) 131.61</p> <p>f) Cess @ 1% on (a+b+c+d+e) 14.48</p> <p>Rate per cum (a+b+c+d+e+f) 1462.14</p> <p style="text-align: right;"><i>say</i> 1462.00</p>					
12.22	1200 & 1900	<p>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.</p> <p><i>Unit = 1 MT</i> <i>Taking output = 1 MT</i></p> <p>a) Material</p> <p>i) Structural steel including 5 per cent wastage tonne 1.050 50728.00 53264.40 M-179</p> <p>b) Labour</p> <p>Mate day 1.240 551.00 683.24 L-12</p> <p>Fitter day 6.000 593.00 3558.00 L-08</p> <p>Blacksmith day 5.000 551.00 2755.00 L-01</p> <p>Welder day 5.000 593.00 2965.00 L-02</p> <p>Mazdoor day 10.000 424.00 4240.00 L-13</p> <p>Electrodes, cutting gas and other consumables @ 5 per cent on cost a (a) above. 2663.22</p> <p>c) GST (multiplying factor 0.2016) on (a+b) 14137.98</p> <p>d) Overhead charges @ 20 % on (a+b+c) 16853.37</p> <p>e) Contractor's profit @ 10 % on (a+b+c+d) 10112.02</p> <p>f) Cess @ 1% on (a+b+c+d+e) 1112.32</p> <p>Rate for per MT (a+b+c+d+e+f) 112344.55</p> <p style="text-align: right;"><i>say</i> 112345.00</p>					
12.23	1100 & 1700	<p>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.</p> <p>Pile diameter-750 mm</p> <p><i>Unit = meter</i> <i>Taking output = 15 m</i></p> <p>a) Materials</p> <p>PCC Grade M35 cum 6.620 10965.00 72588.30 Item 12.11 (C) iv</p> <p>Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV) (Including GST, OH, CP & Cess)</p> <p>Concrete to be cast with a tremie pipe 200mm dia.</p> <p>b) Machinery(for boring and construction)</p>					

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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	10129.00	60774.00	P&M-036
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.500	490.00	245.00	P&M-013
		Hire and running charges of Bentonite pump	hour	6.000	Rate included in piling rig		
		Loader 1 cum bucket capacity.	hour	0.300	1838.00	551.40	P&M-017
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.300	916.00	274.80	P&M-048
		Bentonite	kg	300.000	14.00	4200.00	M-071
		c) Labour					
		Mate/Supervisor	day	0.140	551.00	77.14	L-12
		Mazdoor	day	3.500	424.00	1484.00	L-13
		d) GST (multiplying factor 0.2016) on (a+b+c)				13629.44	
		e) Overhead charges @ 20 % on (a+b+c+d)				16247.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				9748.29	
		g) Cess @ 1% on (a+b+c+d+e+f)				1072.31	
		Cost for 15 m = a+b+c+d+e+f+g				180891.84	
		Rate per metre (a+b+c+d+e+f+g)/15				12059.46	
					say	<u>12059.00</u>	
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	10965.00	86075.25	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	10129.00	60774.00	P&M-036
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.500	490.00	245.00	P&M-013
		Hire and running charges of Bentonite pump	hour	6.000	Rate included in piling rig		
		Loader 1 cum bucket capacity.	hour	0.400	1838.00	735.20	P&M-017
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.400	916.00	366.40	P&M-048
		Bentonite	kg	350.000	14.00	4900.00	M-071
		c) Labour					
		Mate/Supervisor	day	0.160	551.00	88.16	L-12

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	day	4.000	424.00	1696.00	L-13
		d) GST (multiplying factor 0.2016) on (a+b+c)				13871.04	
		e) Overhead charges @ 20 % on (a+b+c+d)				16535.16	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				9921.10	
		g) Cess @ 1% on (a+b+c+d+e+f)				1091.32	
		Cost for 10 m = a+b+c+d+d+e+f+g				196298.63	
		Rate per metre (a+b+c+d+e+f+g)/10				19629.86	
					say	<u>19630.00</u>	
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	10965.00	111514.05	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	10129.00	60774.00	P&M-036
		Hire and running charges of light crane for lowering reinforcement cage	hour	0.500	490.00	245.00	P&M-013
		Hire and running charges of Bentonite pump	hour	6.000	Rate included in piling rig		
		Loader 1 cum bucket capacity.	hour	0.500	1838.00	919.00	P&M-017
		Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.500	916.00	458.00	P&M-048
		Bentonite	kg	385.000	14.00	5390.00	M-071
		c) Labour					
		Mate/Supervisor	day	0.180	551.00	99.18	L-12
		Mazdoor	day	4.500	424.00	1908.00	L-13
		d) GST (multiplying factor 0.2016) on (a+b+c)				14070.31	
		e) Overhead charges @ 20 % on (a+b+c+d)				16772.70	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				10063.62	
		g) Cess @ 1% on (a+b+c+d+e+f)				1107.00	
		Cost for 9 m = a+b+c+d+d+e+f+g				223320.86	
		Rate per metre (a+b+c+d+e+f+g)/9				24813.43	
					say	<u>24813.00</u>	
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	10965.00	193641.90	Item 12.11 (C) iv

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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	66.00	10560.00	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.000	257.00	17990.00	M-124
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.000	212.00	10600.00	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	7335.00	44010.00	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.500	827.00	413.50	P&M-070
			d) Labour					
			Mate/Supervisor	day	0.120	551.00	66.12	L-12
			Mazdoor	day	3.000	424.00	1272.00	L-13
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				17118.18	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				20405.96	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				12243.58	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1346.79	
			Cost for 40 m = a+b+c+d+e+f+g+h				329668.03	
			Rate per metre (a+b+c+d+e+f+g+h)/40				8241.70	
						say	8242.00	
		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	10965.00	258225.75	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	66.00	10560.00	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.000	257.00	17990.00	M-124
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.000	212.00	10600.00	M-173

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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	7335.00	44010.00	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.500	827.00	413.50	P&M-070
			Hire and running charges for light crane for lowering reinforcement cage.	hour	0.500	490.00	245.00	P&M-013
			d) Labour					
			Mate/Supervisor	day	0.160	551.00	88.16	L-12
			Mazdoor	day	4.000	424.00	1696.00	L-13
			e) GST (multiplying factor 0.2016) on (a+b+c+d)				17257.50	
			f) Overhead charges @ 20 % on (a+b+c+d+e)				20572.03	
			g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				12343.22	
			h) Cess @ 1% on (a+b+c+d+e+f+g)				1357.75	
			Cost for 30 m = a+b+c+d+e+f+g+h				395358.91	
			Rate per metre (a+b+c+d+e+f+g+h)/30				13178.63	
						say	<u>13179.00</u>	
		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	10965.00	247918.65	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	66.00	10560.00	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.000	257.00	17990.00	M-124
			iii) Steel helmet on top of casing head during driving	Kg	50.000	212.00	10600.00	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	7335.00	44010.00	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.500	827.00	413.50	P&M-070

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		d) Labour					
		Mate/Supervisor	day	0.180	551.00	99.18	L-12
		Mazdoor	day	4.500	424.00	1908.00	L-13
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				17253.07	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				20566.75	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				12340.05	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				1357.41	
		Cost for 20 m = a+b+c+d+e+f+g+h				385016.61	
		Rate per metre (a+b+c+d+e+f+g+h)/20				19250.83	
					say	<u>19251.00</u>	
		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	450.00		
		b) Lateral load test	tonne	1.000	6400.00		
		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	9100.00	46592.00	M-081
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
		10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b) Labour					
		Mate	day	0.900	551.00	495.90	L-12
		Mason	day	1.500	551.00	826.50	L-10
		Mazdoor for concreting	day	20.000	424.00	8480.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	424.00	424.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
		Generator (capacity 33 KVA)	hour	6.000	506.00	3036.00	P&M-079
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3643.92	
		d) GST (multiplying factor 0.2016) on (a+b+c)				19099.95	
		e) Overhead charges @ 20 % on (a+b+c+d)				22768.35	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				13661.01	
		g) Cess @ 1% on (a+b+c+d+e+f)				1502.71	
		Cost for 15 cum = a+b+c+d+e+f+g				151773.84	
		Rate per metre (a+b+c+d+e+f+g)/15				10118.26	
					say	<u>10118.00</u>	

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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	9100.00	46592.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-004
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b)	Labour					
			Mate	day	0.160	551.00	88.16	L-12
			Mason	day	0.380	551.00	209.38	L-10
			Mazdoor for concreting	day	2.500	424.00	1060.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	424.00	424.00	L-13
		c)	Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	3200.00	2400.00	P&M-002
			Generator 100 KVA	hour	0.75	938.00	703.50	P&M-080
			Loader (capacity 1 cum)	hour	0.750	1838.00	1378.50	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1265.00	2530.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	37.5L	80.00	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	0.75	2726.00	2044.50	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3477.10	
		d)	GST (multiplying factor 0.2016) on (a+b+c)					
							18225.58	
		e)	Overhead charges @ 20 % on (a+b+c+d)					
							21726.04	
		f)	Contractor's profit @ 10 % on (a+b+c+d+e)					
							13035.63	
		g)	Cess @ 1% on (a+b+c+d+e+f)					
							1433.92	
			Cost for 15 cum = a+b+c+d+e+f+g					
							144825.81	
			Rate per metre (a+b+c+d+e+f+g)/15					
							9655.05	
						say	<u>9655.00</u>	
		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	9100.00	54509.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b)	Labour					
			Mate	day	0.900	551.00	495.90	L-12
			Mason	day	1.500	551.00	826.50	L-10
			Mazdoor for concreting	day	20.000	424.00	8480.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	424.00	424.00	L-13
		c)	Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator (capacity 33 KVA)	hour	6.000	506.00	3036.00	P&M-079

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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				3960.60	
			d) GST (multiplying factor 0.2016) on (a+b+c)				20759.86	
			e) Overhead charges @ 20 % on (a+b+c+d)				24747.07	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				14848.24	
			g) Cess @ 1% on (a+b+c+d+e+f)				1633.31	
			Cost for 15 cum = a+b+c+d+e+f+g				164963.98	
			Rate per metre (a+b+c+d+e+f+g)/15				10997.60	
						say	<u>10998.00</u>	
12.38B		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
		a)	Material					
			Cement	tonne	5.990	9100.00	54509.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-004
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b)	Labour					
			Mate	day	0.160	551.00	88.16	L-12
			Mason	day	0.380	551.00	209.38	L-10
			Mazdoor for concreting	day	2.500	424.00	1060.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	424.00	424.00	L-13
		c)	Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	3200.00	2400.00	P&M-002
			Generator 125 KVA	hour	0.75	1135.00	851.25	P&M-018
			Loader (capacity 1 cum)	hour	0.750	1838.00	1378.50	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1265.00	2530.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	37.5L	80.00	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	0.75	2726.00	2044.50	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3799.69	
			d) GST (multiplying factor 0.2016) on (a+b+c)				19916.46	
			e) Overhead charges @ 20 % on (a+b+c+d)				23741.69	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				14245.01	
			g) Cess @ 1% on (a+b+c+d+e+f)				1566.95	
			Cost for 15 cum = a+b+c+d+e+f+g				158262.09	
			Rate per metre (a+b+c+d+e+f+g)/15				10550.81	
						say	<u>10551.00</u>	
		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	9100.00	55510.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-005
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b)	Labour					
			Mate	day	0.900	551.00	495.90	L-12
			Mason	day	1.500	551.00	826.50	L-10

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Sr No	Ref. to MoRTH/ DSR Spec.		Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
			Mazdoor for concreting	day	20.000	424.00	8480.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	424.00	424.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
			Generator (capacity 33 KVA)	hour	6.000	506.00	3036.00	P&M-079
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				4000.64	
			d) GST (multiplying factor 0.2016) on (a+b+c)				20969.73	
			e) Overhead charges @ 20 % on (a+b+c+d)				24997.25	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				14998.35	
			g) Cess @ 1% on (a+b+c+d+e+f)				1649.82	
			Cost for 15 cum = a+b+c+d+e+f+g				166631.69	
			Rate per metre (a+b+c+d+e+f+g)/15				11108.78	
						say	<u>11109.00</u>	
12.38C		(ii)	Using Batching Plant, Transit Mixer and Concrete Pump					
			a) Material					
			Cement	tonne	6.100	9100.00	55510.00	M-081
			Coarse sand	cum	6.750	650.00	4387.50	M-004
			20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
			10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
			b) Labour					
			Mate	day	0.160	551.00	88.16	L-12
			Mason	day	0.380	551.00	209.38	L-10
			Mazdoor for concreting	day	2.500	424.00	1060.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	424.00	424.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	3200.00	2400.00	P&M-002
			Generator 100 KVA	hour	0.75	938.00	703.50	P&M-080
			Loader (capacity 1 cum)	hour	0.750	1838.00	1378.50	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1265.00	2530.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne. km	37.5L	80.00	0.00	Lead =0 km & P&M-050
			Concrete Pump	hour	0.75	2726.00	2044.50	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3833.82	
			d) GST (multiplying factor 0.2016) on (a+b+c)				20095.36	
			e) Overhead charges @ 20 % on (a+b+c+d)				23954.94	
			f) Contractor's profit @ 10 % on (a+b+c+d+e)				14372.97	
			g) Cess @ 1% on (a+b+c+d+e+f)				1581.03	
			Cost for 15 cum = a+b+c+d+e+f+g				159683.66	
			Rate per metre (a+b+c+d+e+f+g)/15				10645.58	
						say	<u>10646.00</u>	
		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	9100.00	57603.00	M-081

CHAPTER-12
FOUNDATIONS

Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
		10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b) Labour					
		Mate	day	0.900	551.00	495.90	L-12
		Mason	day	1.500	551.00	826.50	L-10
		Mazdoor	day	20.000	424.00	8480.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	424.00	424.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28	hour	6.000	291.00	1746.00	P&M-009
		Generator (capacity 33 KVA)	hour	6.000	506.00	3036.00	P&M-079
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				4084.36	
		d) GST (multiplying factor 0.2016) on (a+b+c)				21408.56	
		e) Overhead charges @ 20 % on (a+b+c+d)				25520.36	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				15312.22	
		g) Cess @ 1% on (a+b+c+d+e+f)				1684.34	
		Cost for 15 cum = a+b+c+d+e+f+g				170118.74	
		Rate per metre (a+b+c+d+e+f+g)/15				11341.25	
					say	<u>11341.00</u>	
12.38D		(ii) Using Batching Plant, Transit Mixer and Concrete Pump					
		a) Material					
		Cement	tonne	6.330	9100.00	57603.00	M-081
		Coarse sand	cum	6.750	650.00	4387.50	M-004
		20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
		10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b) Labour					
		Mate	day	0.160	551.00	88.16	L-12
		Mason	day	0.380	551.00	209.38	L-10
		Mazdoor for concreting	day	2.500	424.00	1060.00	L-13
		Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.000	424.00	424.00	L-13
		c) Machinery					
		Batching Plant @ 20 cum/hour	hour	0.750	3200.00	2400.00	P&M-002
		Generator 125 KVA	hour	0.750	1135.00	851.25	P&M-018
		Loader (capacity 1 cum)	hour	0.750	1838.00	1378.50	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Lead upto 1 Km	hour	2.000	1265.00	2530.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne. km	37.5L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	0.750	2726.00	2044.50	P&M-007
		Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				3923.45	
		d) GST (multiplying factor 0.2016) on (a+b+c)				20565.16	
		e) Overhead charges @ 20 % on (a+b+c+d)				24514.98	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				14708.99	
		g) Cess @ 1% on (a+b+c+d+e+f)				1617.99	
		Cost for 15 cum = a+b+c+d+e+f+g				163416.86	
		Rate per metre (a+b+c+d+e+f+g)/15				10894.46	
					say	<u>10894.00</u>	
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					

CHAPTER-12
FOUNDATIONS

Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Material					
		Cement	tonne	4.130	9100.00	37583.00	M-081
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		40 mm aggregate	cum	8.100	1900.00	15390.00	M-055
		20 mm Aggregate	cum	4.050	1900.00	7695.00	M-053
		10 mm Aggregate	cum	1.350	1800.00	2430.00	M-051
		b) Labour					
		Mate	day	0.860	551.00	473.86	L-12
		Mason	day	1.500	551.00	826.50	L-10
		Mazdoor	day	20.000	424.00	8480.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28	hour	6.000	291.00	1746.00	P&M-009
		Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		d) GST (multiplying factor 0.2016) on (a+b+c)				16540.85	
		e) Overhead charges @ 20 % on (a+b+c+d)				19717.74	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				11830.65	
		g) Cess @ 1% on (a+b+c+d+e+f)				1301.37	
		Cost for 15 cum = a+b+c+d+e+f+g				131438.47	
		Rate per metre (a+b+c+d+e+f+g)/15				8762.56	
						say 8763.00	
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 including 5 per cent overlaps and wastage	tonne	1.050	67000.00	70350.00	M-082
		Binding wire	Kg	6.000	105.00	630.00	M-072
		b) Labour for cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.400	551.00	220.40	L-12
		Blacksmith	day	2.000	593.00	1186.00	L-02
		Mazdoor	day	6.000	424.00	2544.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				15105.97	
		d) Overhead charges @ 20 % on (a+b+c)				18007.27	
		e) Contractor's profit @ 10 % on (a+b+c+d)				10804.36	
		f) Cess @ 1% on (a+b+c+d+e)				1188.48	
		Cost per MT = a+b+c+d+e+f				120036.48	
						say 120036.48	
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	67000.00	70350.00	M-126
		Binding wire	Kg	6.000	105.00	630.00	M-072
		b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.430	551.00	236.93	L-12
		Blacksmith	day	2.250	593.00	1334.25	L-02
		Mazdoor	day	6.500	424.00	2756.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				15181.93	
		d) Overhead charges @ 20 % on (a+b+c)				18097.82	

CHAPTER-12
FOUNDATIONS

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)				10858.69	
		f) Cess @ 1% on (a+b+c+d+e)				1194.46	
		Rate for per MT (a+b+c+d+e+f)				120640.08	
					say	120640.00	
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	tonne	0.390	71000.00	27690.00	M-087
		Gusset plates welded for joints, shoe / cap arrangement.					
		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	75409.00	29409.51	Rate in item 12.10 less Input M-179
		Corrosion resistant structural steel ISWB 600	tonne	5.800	71000.00	411800.00	M-087
		Fabrication and placing in position charges for corrosion resistant structural steel ISWB 600 at site of work.	tonne	5.800	75409.00	437372.20	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	212.00	10600.00	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	7335.00	44010.00	P&M-085
		Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	Hour	0.500	827.00	413.50	P&M-070
		d) Labour					
		Mate / Supervisor		0.180	551.00	99.18	L-12
		Mazdoor		4.500	424.00	1908.00	L-13
		e) GST (multiplying factor 0.2016) on (b+c+d)				11497.39	
		f) Overhead charges @ 20 % on (b+c+d+e)				13705.61	
		g) Overhead charges @ 20 % on (b+c+d+e+f)				8223.37	
		h) Cess @ 1% on (b+c+d+e+f+g)				9967.29	
		Cost for 40.00 metre (0.39 + 5.80) = 6.194 MT			Per 6.194 MT	1006696.05	
		= a + b + c + d + e + f + g + h					
		Rate per metre (a+b+c+d+e+f+g+h)/(0.394+5.80)			Per 1.00 MT	162527.62	
					Say	162528.00	

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 suitbly designed RCC pedestals.

CHAPTER-13
SUB-STRUCTURE

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					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Bricks 1st class	each	500.000	12.00	6000.00	M-079
		Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis) (Excluding GST,OH,CP &Cess)	cum	0.240	5727.00	1374.48	Item 12.6 (A)
		b) Labour					
		Mate	day	0.060	551.00	33.06	L-12
		Mason	day	0.800	593.00	474.40	L-11
		Mazdoor	day	0.800	424.00	339.20	L-13
		Add for scaffolding @ 5 per cent of cost of material and labour				411.06	
		c) GST (multiplying factor 0.2016) on (a+b)				1740.25	
		d) Overhead charges @ 20 % on (a+b+c)				2074.49	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1244.69	
		f) Cess @ 1% on (a+b+c+d+e)				136.92	
		Rate per cum (a+b+c+d+e+f)				13828.55	
					say	<u>13829.00</u>	
13.2	1300 & 2200	Pointing with cement mortar (1:3) on brick work in substructure as per Technical Specifications					
		<i>Unit = 10 sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Material					
		Cement mortar 1:3 (Rate as in Item 12.6)(Excluding GST,OH,CP &Cess)	cum	0.030	5727.00	171.81	Item 12.6 (A)
		b) Labour					
		Mate	day	0.040	551.00	22.04	L-12
		Mason	day	0.500	593.00	296.50	L-11
		Mazdoor	day	0.500	424.00	212.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				141.59	
		d) Overhead charges @ 20 % on (a+b+c)				168.79	
		e) Contractor's profit @ 10 % on (a+b+c+d)				101.27	
		f) Cess @ 1% on (a+b+c+d+e)				11.14	
		Rate per 10 sqm (a+b+c+d+e+f)				1125.14	
					say	<u>112.50</u>	
	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					
		<i>Unit = 10 sqm</i>					
		<i>Taking output = 10 sqm</i>					
		a) Material					
		Cement mortar 1:3 (Rate as in Item 12.6) (Excluding GST,OH,CP &Cess)	cum	0.144	5727.00	824.69	Item 12.6 (A)
		b) Labour					
		Mate	day	0.040	551.00	22.04	L-12
		Mason	day	0.500	593.00	296.50	L-11
		Mazdoor	day	0.500	424.00	212.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				273.21	
		d) Overhead charges @ 20 % on (a+b+c)				325.69	
		e) Contractor's profit @ 10 % on (a+b+c+d)				195.41	
		f) Cess @ 1% on (a+b+c+d+e)				21.50	
		Rate per 10 sqm (a+b+c+d+e+f)				2171.04	
					say	<u>217.10</u>	

CHAPTER-13
SUB-STRUCTURE

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	605.00	605.00	M-148
		Through and bond stone	No	7.000	15.00	105.00	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	5727.00	1889.91	Item 12.6 (A)
		b) Labour					
		Mate	day	0.100	551.00	55.10	L-12
		Mason	day	1.200	593.00	711.60	L-11
		Mazdoor	day	1.200	424.00	508.80	L-13
		Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour					193.77
		c) GST (multiplying factor 0.2016) on (a+b)					820.35
		d) Overhead charges @ 20 % on (a+b+c)					977.91
		e) Contractor's profit @ 10 % on (a+b+c+d)					586.74
		f) Cess @ 1% on (a+b+c+d+e)					64.54
		Rate per cum (a+b+c+d)					6518.72
					say	6519.00	
13.4		B Coursed rubble masonry (first sort)					
		Unit = cum					
		Taking output = 1 cum					
		a) Material					
		Stone	cum	1.100	605.00	665.50	M-148
		Through and bond stone	each	7.000	15.00	105.00	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	5727.00	1718.10	Item 12.6 (A)
		b) Labour					
		Mate	day	0.120	551.00	66.12	L-12
		Mason	day	1.500	593.00	889.50	L-11
		Mazdoor	day	1.500	424.00	636.00	L-13
		Add for scaffolding @ 5 per cent of cost of material and labour					204.01
		c) GST (multiplying factor 0.2016) on (a+b)					863.70
		d) Overhead charges @ 20 % on (a+b+c)					1029.59
		e) Contractor's profit @ 10 % on (a+b+c+d)					617.75
		f) Cess @ 1% on (a+b+c+d+e)					67.95
		Rate per cum (a+b+c+d+e+f)					6863.22
					say	6863.00	
13.4		C Ashlar masonry (first sort)					
		Plain ashlar					
		Unit = cum					
		Taking output = 1 cum					

CHAPTER-13
SUB-STRUCTURE

Sr No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		a) Material					
		Stone	cum	1.110	605.00	671.55	M-169
		Through and bond stone	each	7.000	15.00	105.00	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	5727.00	1889.91	Item 12.6 (A)
		b) Labour for masonry work					
		Mate	day	0.200	551.00	110.20	L-12
		Mason	day	2.500	593.00	1482.50	L-11
		Mazdoor	day	2.500	424.00	1060.00	L-13
		Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				265.96	
		c) GST (multiplying factor 0.2016) on (a+b)				1125.96	
		d) Overhead charges @ 20 % on (a+b+c)				1342.22	
		e) Contractor's profit @ 10 % on (a+b+c+d)				805.33	
		f) Cess @ 1% on (a+b+c+d+e)				88.59	
		Rate per cum (a+b+c+d+e+f)				8947.22	
					say	8947.00	
13.5	1500, 1700 & 2200	<p>Note The labour already considered in the cement mortar have been taken into account while providing these categories in the stone masonry works.</p> <p>Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications</p> <p>Unit = cum</p> <p>Taking output = 1 cum</p> <p>A PCC Grade M15</p> <p>(p) Height upto 5m</p> <p>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.</p> <p>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (A) (Excluding GST,OH,CP &Cess)</p> <p>d) formwork</p> <p>Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork</p> <p>e) GST (multiplying factor 0.2016) on (a+b+c+d)</p> <p>f) Overhead charges @ 20 % on (a+b+c+d+e)</p> <p>g) Contractor's profit @ 10 % on (a+b+c+d+e+f)</p> <p>h) Cess @ 1% on (a+b+c+d+e+f+g)</p> <p>Rate perm (a+b+c+d+e+f+g+h)</p> <p>say 9912.00</p>					
13.5		B PCC Grade M20					
		(p) Height upto 5m					
		<p>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.</p> <p>Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (B) (Excluding GST,OH,CP &Cess)</p>					
						6090.00	Item 12.8 (B) PCC

CHAPTER-13
SUB-STRUCTURE

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		609.00	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1350.52	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1609.90	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				965.94	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				106.25	
		Rate perm (a+b+c+d+e+f+g+h)				10731.61	
					say	<u>10732.00</u>	
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)				6594.00	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		659.40	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1462.29	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1743.14	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1045.88	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				115.05	
		Rate perm (a+b+c+d+e+f+g+h)				11619.76	
					say	<u>11620.00</u>	
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)				6297.00	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		629.70	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1396.42	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1664.62	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				998.77	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				109.87	
		Rate perm (a+b+c+d+e+f+g+h)				11096.38	
					say	<u>11096.00</u>	
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)				6594.00	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		791.28	

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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		131.88	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1515.46	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1806.52	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1083.91	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				119.23	
		Rate perm (a+b+c+d+e+f+g+h)				12042.28	
					say	<u>12042.00</u>	
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)				6297.00	
		d) formwork					
		Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.000		755.64	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		125.94	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1447.20	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1725.16	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1035.09	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				113.86	
		Rate perm (a+b+c+d+e+f+g+h)				11499.89	
					say	<u>11500.00</u>	
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)				6594.00	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		989.10	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		263.76	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1581.93	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1885.76	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1131.46	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				124.46	
		Rate perm (a+b+c+d+e+f+g+h)				12570.47	
					say	<u>12570.00</u>	
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)				6297.00	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		944.55	

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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		251.88	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1510.68	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1800.82	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1080.49	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				118.85	
		Rate perm (a+b+c+d+e+f+g+h)				12004.27	
					say	<u>12004.00</u>	
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)				6649.00	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		664.90	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1474.48	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1757.68	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1054.61	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				116.01	
		Rate perm (a+b+c+d+e+f+g+h)				11716.68	
					say	<u>11717.00</u>	
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)				6346.00	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		634.60	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1407.29	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1677.58	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1006.55	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				110.72	
		Rate perm (a+b+c+d+e+f+g+h)				11182.74	
					say	<u>11183.00</u>	
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)				6649.00	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		797.88	

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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		132.98	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1528.10	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1821.59	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1092.96	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				120.23	
		Rate perm (a+b+c+d+e+f+g+h)				12142.74	
					say	<u>12143.00</u>	
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)				6346.00	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		761.52	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		126.92	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1458.46	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1738.58	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1043.15	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				114.75	
		Rate perm (a+b+c+d+e+f+g+h)				11589.38	
					say	<u>11589.00</u>	
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)				6649.00	12.8 (F)
		d) formwork					
		Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.000		997.35	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		265.96	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1595.12	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1901.49	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1140.89	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				125.50	
		Rate perm (a+b+c+d+e+f+g+h)				12675.31	
					say	<u>12675.00</u>	
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)				6346.00	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		951.90	

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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		253.84	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1522.43	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1814.83	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1088.90	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				119.78	
		Rate perm (a+b+c+d+e+f+g+h)				12097.68	
					say	<u>12098.00</u>	
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)				6103.00	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		610.30	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1353.40	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1613.34	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				968.00	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				106.48	
		Rate perm (a+b+c+d+e+f+g+h)				10754.52	
					say	<u>10755.00</u>	
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)				5802.00	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		580.20	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1286.65	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1533.77	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				920.26	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				101.23	
		Rate perm (a+b+c+d+e+f+g+h)				10224.11	
					say	<u>10224.00</u>	
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)				6103.00	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		732.36	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		122.06	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1402.62	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1672.01	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1003.21	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				110.35	
		Rate perm (a+b+c+d+e+f+g+h)				11145.61	
					say	<u>11146.00</u>	
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)				5802.00	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		696.24	
		Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.000		116.04	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1333.44	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1589.54	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				953.73	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				104.91	
		Rate perm (a+b+c+d+e+f+g+h)				10595.90	
					say	<u>10596.00</u>	
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)				6103.00	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		915.45	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		244.12	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1464.13	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1745.34	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1047.20	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				115.19	
		Rate perm (a+b+c+d+e+f+g+h)				11634.43	
					say	<u>11634.00</u>	
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)				5802.00	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		870.30	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		232.08	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1391.92	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1659.26	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				995.56	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				109.51	
		Rate perm (a+b+c+d+e+f+g+h)				11060.63	
					say	<u>11061.00</u>	
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)				6612.00	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		661.20	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1466.28	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1747.90	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1048.74	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				115.36	
		Rate perm (a+b+c+d+e+f+g+h)				11651.48	
					say	<u>11651.00</u>	
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)				6415.00	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		641.50	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1422.59	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1695.82	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1017.49	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				111.92	
		Rate perm (a+b+c+d+e+f+g+h)				11304.32	
					say	<u>11304.00</u>	
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)				6612.00	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		780.22	
		Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.800		119.02	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1514.27	

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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)				1805.10	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1083.06	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				119.14	
		Rate perm (a+b+c+d+e+f+g+h)				12032.81	
					say	<u>12033.00</u>	
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)				6415.00	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		756.97	
		Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.800		115.47	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1469.15	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1751.32	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1050.79	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				115.59	
		Rate perm (a+b+c+d+e+f+g+h)				11674.29	
					say	<u>11674.00</u>	
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)				6612.00	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		991.80	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		264.48	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1586.25	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1890.91	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1134.54	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				124.80	
		Rate perm (a+b+c+d+e+f+g+h)				12604.78	
					say	<u>12605.00</u>	
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)				6415.00	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		962.25	
		Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.000		256.60	

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Sr No	Ref. to MoRTH/DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1538.98	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1834.57	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1100.74	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				121.08	
		Rate perm (a+b+c+d+e+f+g+h)				12229.22	
					say	<u>12229.00</u>	
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)				6643.00	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		664.30	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1473.15	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1756.09	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1053.65	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				115.90	
		Rate perm (a+b+c+d+e+f+g+h)				11706.09	
					say	<u>11706.00</u>	
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)				6343.00	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		634.30	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1406.62	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1676.78	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1006.07	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				110.67	
		Rate perm (a+b+c+d+e+f+g+h)				11177.44	
					say	<u>11177.00</u>	
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)				6643.00	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		763.95	
		Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.600		106.29	
		e) GST (multiplying factor 0.2016) (a+b+c+d)				1514.67	

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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)				1805.58	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1083.35	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				119.17	
		Rate perm (a+b+c+d+e+f+g+h)				12036.01	
					say	<u>12036.00</u>	
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)				6343.00	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		729.45	
		Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.600		101.49	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1446.27	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1724.04	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1034.43	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				113.79	
		Rate perm (a+b+c+d+e+f+g+h)				11492.47	
					say	<u>11492.00</u>	
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)				6643.00	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		930.02	
		Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.500		232.51	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1573.59	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1875.82	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1125.49	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				123.80	
		Rate perm (a+b+c+d+e+f+g+h)				12504.23	
					say	<u>12504.00</u>	
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)				6343.00	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		888.02	
		Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.500		222.01	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1502.53	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1791.11	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1074.67	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				118.21	
		Rate perm (a+b+c+d+e+f+g+h)				11939.55	
					say	11940.00	
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)				6782.00	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		678.20	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1503.98	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1792.84	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1075.70	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				118.33	
		Rate perm (a+b+c+d+e+f+g+h)				11951.05	
					say	11951.00	
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)				6591.00	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		659.10	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1461.62	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1742.34	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1045.41	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				114.99	
		Rate perm (a+b+c+d+e+f+g+h)				11614.46	
					say	11614.00	
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)				6782.00	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		746.02	
		Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.400		94.95	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1536.79	

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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)				1831.95	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1099.17	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				120.91	
		Rate perm (a+b+c+d+e+f+g+h)				12211.79	
					say	<u>12212.00</u>	
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)				6591.00	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		725.01	
		Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.400		92.27	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1493.51	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1780.36	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1068.22	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				117.50	
		Rate perm (a+b+c+d+e+f+g+h)				11867.87	
					say	<u>11868.00</u>	
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)				6782.00	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		881.66	
		Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.000		203.46	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1586.01	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1890.63	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1134.38	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				124.78	
		Rate perm (a+b+c+d+e+f+g+h)				12602.92	
					say	<u>12603.00</u>	
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)				6591.00	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		856.83	
		Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.000		197.73	

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Sr No	Ref. to MoRTH/ DSR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1541.34	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1837.38	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				1102.43	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				121.27	
		Rate perm (a+b+c+d+e+f+g+h)				12247.98	
					say	<u>12248.00</u>	
	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	67000.00	70350.00	M-082
		Binding wire	kg	6.000	105.00	630.00	M-072
		b) Labour for cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.340	551.00	187.34	L-12
		Blacksmith	day	2.000	593.00	1186.00	L-02
		Mazdoor	day	6.500	424.00	2756.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				15142.04	
		d) Overhead charges @ 20 % on (a+b+c)				18050.28	
		e) Contractor's profit @ 10 % on (a+b+c+d)				10830.17	
		f) Cess @ 1% on (a+b+c+d+e)				1191.32	
		Rate for per MT (a+b+c+d)				120323.15	
					say	<u>120323.00</u>	
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	67000.00	70350.00	M-126
		Binding wire	kg	6.000	105.00	630.00	M-072
		b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
		Mate	day	0.280	551.00	154.28	L-12
		Blacksmith	day	1.500	593.00	889.50	L-02
		Mazdoor	day	5.500	424.00	2332.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				14990.13	
		d) Overhead charges @ 20 % on (a+b+c)				17869.18	
		e) Contractor's profit @ 10 % on (a+b+c+d)				10721.51	

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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)				1179.37	
		Rate for per MT (a+b+c+d)				119115.97	
					say	119116.00	
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 face. 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	43.00	1354.50	M-056
		Average length of weep hole is taken as one metre for the purpose of estimating.					
		MS clamp	each.	30.000	81.00	2430.00	M-123
		collar for AC pipe (average) taking 10% of above pipe rate	each.	10.000	4.30	43.00	M-056/10
		Cement mortar 1:3 (Rate as in Item 12.6) (Excluding GST,OH,CP &Cess)	cum	0.050	5727.00	286.35	Item 12.6 (A)
		b) Labour					
		Mate	day	0.030	551.00	16.53	L-12
		Mason	day	0.500	593.00	296.50	L-11
		Mazdoor	day	0.250	424.00	106.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				913.83	
		d) Overhead charges @ 20 % on (a+b+c)				1089.34	
		e) Contractor's profit @ 10 % on (a+b+c+d)				653.61	
		f) Cess @ 1% on (a+b+c+d+e)				71.90	
		Cost for 30 m = a+b+c+d+e+f				7261.56	
		Rate per m (a+b+c+d+e+f)/30				242.05	
					say	242.00	
	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	551.00	154.28	L-12
		Mazdoor	day	7.000	424.00	2968.00	L-13
		b) Material					
		Granular material	cum	12.000	500.00	6000.00	M-009
		c) Machinery					
		Plate compactor/power rammer	hour	2.500	382.00	955.00	P&M-086
		Water Tanker	hour	0.050	724.00	36.20	P&M-060
		d) GST (multiplying factor 0.2016) on (a+b+c)				2038.88	
		e) Overhead charges @ 20 % on (a+b+c+d)				2430.47	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1458.28	
		g) Cess @ 1% on (a+b+c+d+e+f)				160.41	
		Cost for 10 cum of granular backfill = a+b+c+d+e+f+g				16201.52	
		Rate per cum = (a+b+c+d+e+f+g)/10				1620.15	
					say	1620.00	

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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	551.00	154.28	L-12
		Mazdoor for filling, watering, ramming etc.	day	7.000	424.00	2968.00	L-13
	b)	Material					
		Sand	cum	12.000	650.00	7800.00	M-006
	c)	Machinery					
		Plate compactor/power rammer	hour	2.500	382.00	955.00	P&M-086
		Water Tanker	hour	0.060	724.00	43.44	P&M-060
	d)	GST (multiplying factor 0.2016) on (a+b+c)				2403.22	
	e)	Overhead charges @ 20 % on (a+b+c+d)				2864.79	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				1718.87	
	g)	Cess @ 1% on (a+b+c+d+e+f)				189.08	
		Cost for 10 cum of sandy backfill = a+b+c+d+e				19096.68	
		Rate per cum = (a+b+c+d+e)/10				1909.67	
					say	1910.00	
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	551.00	176.32	L-12
		Mazdoor for filling, watering, ramming etc.	day	7.000	424.00	2968.00	L-13
		Mazdoor (Skilled)	day	1.000	508.00	508.00	L-15
	b)	Material					
		Filter media of stone aggregate conforming to clause 2504.2.2. of MoRTH specifications.	cum	12.000	1450.00	17400.00	M-012
	c)	Machinery					
		Water Tanker of 6 KL capacity	hour	0.060	724.00	43.44	P&M-060
	d)	GST (multiplying factor 0.2016) on (a+b+c)				4252.91	
	e)	Overhead charges @ 20 % on (a+b+c+d)				5069.73	
	f)	Contractor's profit @ 10 % on (a+b+c+d+e)				3041.84	
	g)	Cess @ 1% on (a+b+c+d+e+f+g)				334.60	
		cost for 10 cum of Fiter Media = a+b+c+d+e+f+g				33794.84	
		Rate per cum = (a+b+c+d+e+f+g)/10				3379.48	
					say	3379.00	
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	551.00	33.06	L-12
		Mazdoor (Skilled)	day	0.500	508.00	254.00	L-15
		Mazdoor	day	1.000	424.00	424.00	L-13

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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	344046.00	344046.00	M-065
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				3440.46	
		c) GST (multiplying factor 0.2016) on (a+b)				70196.62	
		d) Overhead charges @ 20 % on (a+b+c)				83678.83	
		e) Contractor's profit @ 10 % on (a+b+c+d)				50207.30	
		f) Cess @ 1% on (a+b+c+d+e)				5522.80	
		Cost for 250 tonnes capacity bearing = a+b+c+d+e+f				557803.07	
		Rate per tonne capacity = (a+b+c+d+e+f)/250				2231.21	
					say	<u>2231.00</u>	
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	551.00	33.06	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		Mazdoor (Skilled)	day	0.500	508.00	254.00	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	302759.00	302759.00	M-067
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				3027.59	
		c) GST (multiplying factor 0.2016) on (a+b)				61789.93	
		d) Overhead charges @ 20 % on (a+b+c)				73657.52	
		e) Contractor's profit @ 10 % on (a+b+c+d)				44194.51	
		f) Cess @ 1% on (a+b+c+d+e)				4861.40	
		cost for 250 tonnes capacity bearing = a+b+c+d+e+f				491001.01	
		Rate per tonne capacity = (a+b+c+d+e+f)/250				1964.00	
					say	<u>1964.00</u>	
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	551.00	33.06	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		Mazdoor (Skilled)	day	0.500	508.00	254.00	L-15

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SUB-STRUCTURE

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	206437.00	206437.00	M-069
		Add 1 per cent for foundation anchorage bolts and consumables.				2064.37	
		c) GST (multiplying factor 0.2016) on (a+b)				42177.23	
		d) Overhead charges @ 20 % on (a+b+c)				50277.93	
		e) Contractor's profit @ 10 % on (a+b+c+d)				30166.76	
		f) Cess @ 1% on (a+b+c+d+e)				3318.34	
		cost for 80 tonnes capacity bearing = a+b+c+d+e+f				335152.69	
		Rate per tonne capacity = (a+b+c+d+e+f)/80				4189.41	
					say	<u>4189.00</u>	
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	551.00	33.06	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		Mazdoor (Skilled)	day	0.500	508.00	254.00	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	16514.00	16514.00	M-066
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				165.14	
		c) GST (multiplying factor 0.2016) on (a+b)				3505.86	
		d) Overhead charges @ 20 % on (a+b+c)				4179.21	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2507.53	
		f) Cess @ 1% on (a+b+c+d+e)				275.83	
		Cost for 19200cc of elastomeric bearing = a+b+c+d				27858.63	
		Rate per cc of elastomeric bearing = (a+b+c+d)/19200				1.45	
					say	<u>1.00</u>	
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					

CHAPTER-13
SUB-STRUCTURE

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	551.00	22.04	L-12
		Mazdoor	day	0.750	424.00	318.00	L-13
		Mazdoor (Skilled)	day	0.350	508.00	177.80	L-15
		b) Material					
		Supply of sliding plate bearing of 80 tonne design capacity complete as per drawings and Technical Specifications.	each.	1.000	16514.00	16514.00	M-070
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				165.14	
		c) GST (multiplying factor 0.2016) on (a+b)				3466.91	
		d) Overhead charges @ 20 % on (a+b+c)				4132.78	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2479.67	
		f) Cess @ 1% on (a+b+c+d+e)				272.76	
		Cost for 80 tonnes of capacity bearing = a+b+c+d+e+f				27549.10	
		Rate per tonne capacity = (a+b+c+d+e+f)/80				344.36	
					say	344.00	
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	551.00	44.08	L-12
		Mazdoor	day	1.500	424.00	636.00	L-13
		Mazdoor (Skilled)	day	0.500	508.00	254.00	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	68782.00	68782.00	M-068
		Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				687.82	
		c) GST (multiplying factor 0.2016) on (a+b)				14193.43	
		d) Overhead charges @ 20 % on (a+b+c)				16919.47	
		e) Contractor's profit @ 10 % on (a+b+c+d)				10151.68	
		f) Cess @ 1% on (a+b+c+d+e)				1116.68	
		cost for 250 tonnes capacity bearing = a+b+c+d+e+f				112785.16	
		Rate per tonne capacity = (a+b+c+d+e+f)/250				451.14	
					say	451.00	

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 coatThe item may be selected as per approved design
- 2 The rates are provided for both RCC Railing and M. S. 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 readymade 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.

CHAPTER-14
SUPER-STRUCTURE

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 RCC Grade M20					
		Case I Using Concrete Mixer					
		Unit = 1 cum					
		Taking output = 15 cum					
		a) Material					
		Cement	tonne	5.120	9100.00	46592.00	M-081
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
		10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b) Labour					
		Mate	day	0.860	551.00	473.86	L-12
		Mason	day	1.500	593.00	889.50	L-11
		Mazdoor	day	20.000	424.00	8480.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
		Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		90715.000			
		For formwork and staging add the following:					
14.1A		(i) For solid slab super-structure, 20-30 per cent of (a+b+c)					
Case I		(p) Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90715.00	
		d) Formwork and staging 20 per cent of (a+b+c)				18143.00	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				21945.77	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				26160.75	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				15696.45	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				1726.61	
		Cost for 15 cum = a+b+c+d+e+f+h				174387.58	
		Rate per cum = (a+b+c+d+e+f+h)/15				11625.84	
					say	11626.00	
14.1A		(q) Height 5m to 10m					
Case I		(i) Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90715.00	
		d) Formwork and staging 25 per cent of (a+b+c)				22678.75	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				22860.18	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				27250.79	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				16350.47	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				1798.55	
		Cost for 15 cum = a+b+c+d+e+f+h				181653.74	
		Rate per cum = (a+b+c+d+e+f+h)/15				12110.25	
					say	12110.00	
14.1A		(r) Height above 10m					
Case I		(i) Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				90715.00	
		d) Formwork and staging 30 per cent of (a+b+c)				27214.50	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				23774.59	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				28340.82	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				17004.49	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				1870.49	
		Cost for 15 cum = a+b+c+d+e+f+h				188919.89	

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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				12594.66	
					say	<u>12595.00</u>	
14.1A Case I	(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
	(p)	Height upto 5m				90715.00	
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum					
	d)	Formwork and staging 25 per cent of (a+b+c)				22678.75	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				22860.18	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				27250.79	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				16350.47	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1798.55	
		Cost for 15 cum = a+b+c+d+e+f+h				181653.74	
		Rate per cum = (a+b+c+d+e+f+h)/15				12110.25	
					say	<u>12110.00</u>	
14.1A Case I	(q)	Height 5m to 10m				90715.00	
	(ii)	Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum					
	d)	Formwork and staging 30 per cent of (a+b+c)				27214.50	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				23774.59	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				28340.82	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				17004.49	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1870.49	
		Cost for 15 cum = a+b+c+d+e+f+h				188919.89	
		Rate per cum = (a+b+c+d+e+f+h)/15				12594.66	
					say	<u>12595.00</u>	
14.1A Case I	(r)	Height above 10m				90715.00	
	(ii)	Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum					
	d)	Formwork and staging 35 per cent of (a+b+c)				31750.25	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				24688.99	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				29430.85	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				17658.51	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1942.44	
		Cost for 15 cum = a+b+c+d+e+f+h				196186.04	
		Rate per cum = (a+b+c+d+e+f+h)/15				13079.07	
					say	<u>13079.00</u>	
14.1A Case II		Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit = cum					
		Taking output = 120 cum					
	a)	Material					
		Cement	tonne	40.920	9100.00	372372.00	M-081
		Coarse sand	cum	54.000	650.00	35100.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
	b)	Labour					
		Mate	day	0.840	551.00	462.84	L-12
		Mason	day	3.000	593.00	1779.00	L-11
		Mazdoor	day	18.000	424.00	7632.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader	hour	6.00	1838.00	11028.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1265.00	18975.00	P&M-049

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SUPER-STRUCTURE

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.k m	300L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		689413.000			
		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				689413.00	
	d)	Formwork and staging 20 per cent of (a+b+c)				137882.60	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				166782.79	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				198815.68	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				119289.41	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				13121.83	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1325305.31	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				11044.21	
					say	11044.00	
14.1A Case II (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				689413.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				172353.25	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				173732.08	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				207099.67	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				124259.80	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				13668.58	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1380526.38	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				11504.39	
					say	11504.00	
14.1A Case II (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				689413.00	
	d)	Formwork and staging 30 per cent of (a+b+c)				206823.90	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				180681.36	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				215383.65	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				129230.19	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				14215.32	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1435747.42	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				11964.56	
					say	11965.00	
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				689413.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				172353.25	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				173732.08	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				207099.67	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				124259.80	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				13668.58	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1380526.38	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				11504.39	
					say	11504.00	

**CHAPTER-14
SUPER-STRUCTURE**

Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1A	(q)	Height 5m to 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				689413.00	
(ii)	d)	Formwork and staging 30 per cent of (a+b+c)				206823.90	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				180681.36	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				215383.65	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				129230.19	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				14215.32	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1435747.42	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				11964.56	
					say	11965.00	
14.1A	(r)	Height above 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				689413.00	
(ii)	d)	Formwork and staging 35 per cent of (a+b+c)				241294.55	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				187630.64	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				223667.64	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				134200.58	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				14762.06	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1490968.47	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				12424.74	
					say	12425.00	
14.1	B	RCC Grade M25					
Case I		Using Concrete Mixer					
		Unit = 1 cum					
		Taking output = 15 cum					
	a)	Material					
		Cement	tonne	5.990	9100.00	54509.00	M-081
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
		10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
	b)	Labour					
		Mate	day	0.880	551.00	484.88	L-12
		Mason	day	1.500	593.00	889.50	L-11
		Mazdoor	day	20.000	424.00	8480.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
		Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum			98643.000		
		For formwork and staging add the following:					
14.1B	(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
Case I	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98643.00	
	d)	Formwork and staging 20 per cent of (a+b+c)				19728.60	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				23863.71	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				28447.06	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				17068.24	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1877.51	

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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				189628.12	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				12641.87	
					say	<u>12642.00</u>	
14.1B Case I (i)	(q)	Height 5m to 10m					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum</i>				98643.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				24660.75	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				24858.04	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				29632.36	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				17779.42	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1955.74	
		Cost for 15 cum = a+b+c+d+e+f+g+h				197529.31	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13168.62	
					say	<u>13169.00</u>	
14.1B Case I (i)	(r)	Height above 10m					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum</i>				98643.00	
	d)	Formwork and staging 30 per cent of (a+b+c)				29592.90	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				25852.36	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				30817.65	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				18490.59	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				2033.97	
		Cost for 15 cum = a+b+c+d+e+f+g+h				205430.47	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13695.36	
					say	<u>13695.00</u>	
14.1B Case I	(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
	(p)	Height upto 5m					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum</i>				98643.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				24660.75	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				24858.04	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				29632.36	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				17779.42	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1955.74	
		Cost for 15 cum = a+b+c+d+e+f+g+h				197529.31	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13168.62	
					say	<u>13169.00</u>	
14.1B Case I (ii)	(q)	Height 5m to 10m					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum</i>				98643.00	
	d)	Formwork and staging 30 per cent of (a+b+c)				29592.90	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				25852.36	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				30817.65	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				18490.59	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				2033.97	
		Cost for 15 cum = a+b+c+d+e+f+g+h				205430.47	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13695.36	
					say	<u>13695.00</u>	

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1B	(r)	Height above 10m					
Case I		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				98643.00	
(ii)		d) Formwork and staging 35 per cent of (a+b+c)				34525.05	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				26846.68	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				32002.95	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				19201.77	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2112.19	
		Cost for 15 cum = a+b+c+d+e+f+g+h				213331.64	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				14222.11	
					say	14222.00	
14.1B	Case II	Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit = cum					
		Taking output = 120 cum					
	a)	Material					
		Cement	tonne	47.950	9100.00	436345.00	M-081
		Coarse sand	cum	54.200	650.00	35230.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
	b)	Labour					
		Mate	day	0.840	551.00	462.84	L-12
		Mason	day	3.000	593.00	1779.00	L-11
		Mazdoor	day	18.000	424.00	7632.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader	hour	6.00	1838.00	11028.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1265.00	18975.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.k m	300L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				753516.000	
		For formwork and staging add the following:					
14.1B	(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
Case II	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				753516.00	
		d) Formwork and staging 20 per cent of (a+b+c)				150703.20	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				182290.59	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				217301.96	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				130381.18	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				14341.93	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1448534.86	
		Rate per cum = (a+b+c+d+e+f)/120				12071.12	
					say	12071.00	
14.1B	(q)	Height 5m to 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				753516.00	
(i)		d) Formwork and staging 25 per cent of (a+b+c)				188379.00	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				189886.03	

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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)				226356.21	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				135813.72	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				14939.51	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1508890.47	
		Rate per cum = (a+b+c+d+e+f)/120				12574.09	
					say	<u>12574.00</u>	
14.1B	(r)	Height above 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				753516.00	
(i)	d)	Formwork and staging 30 per cent of (a+b+c)				226054.80	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				197481.47	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				235410.45	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				141246.27	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				15537.09	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1569246.08	
		Rate per cum = (a+b+c+d+e+f)/120				13077.05	
					say	<u>13077.00</u>	
14.1B	(ii)	For T-beam & slab, 25-35 per cent of (a+b+c)					
Case II	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				753516.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				188379.00	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				189886.03	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				226356.21	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				135813.72	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				14939.51	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1508890.47	
		Rate per cum = (a+b+c+d+e+f)/120				12574.09	
					say	<u>12574.00</u>	
14.1B	(q)	Height 5m to 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				753516.00	
(ii)	d)	Formwork and staging 30 per cent of (a+b+c)				226054.80	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				197481.47	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				235410.45	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				141246.27	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				15537.09	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1569246.08	
		Rate per cum = (a+b+c+d+e+f)/120				13077.05	
					say	<u>13077.00</u>	
14.1B	(r)	Height above 10m					
Case II	d)	Formwork and staging 35 per cent of (a+b+c)				263730.60	
(ii)	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				205076.91	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				244464.70	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				146678.82	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16134.67	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1629601.70	
		Rate per cum = (a+b+c+d+e+f)/120				13580.01	
					say	<u>13580.00</u>	
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	9100.00	55510.00	M-081

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
		10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		b) Labour					
		Mate	day	0.900	551.00	495.90	L-12
		Mason	day	1.500	593.00	889.50	L-11
		Mazdoor	day	21.000	424.00	8904.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
		Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		100079.000			
		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				100079.00	
		d) Formwork and staging 20 per cent of (a+b+c)				20015.80	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				24211.11	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				28861.18	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				17316.71	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				1904.84	
		Cost for 15 cum = a+b+c+d+e+f+g+h				192388.64	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				12825.91	
					say	12826.00	
14.1C Case I (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				100079.00	
		d) Formwork and staging 25 per cent of (a+b+c)				25019.75	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				25219.91	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				30063.73	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				18038.24	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				1984.21	
		Cost for 15 cum = a+b+c+d+e+f+g+h				200404.84	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13360.32	
					say	13360.00	
14.1C Case I (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				100079.00	
		d) Formwork and staging 30 per cent of (a+b+c)				30023.70	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				26228.70	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				31266.28	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				18759.77	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2063.57	
		Cost for 15 cum = a+b+c+d+e+f+g+h				208421.02	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13894.73	
					say	13895.00	
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				100079.00	
		d) Formwork and staging 25 per cent of (a+b+c)				25019.75	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				25219.91	

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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)				30063.73	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				18038.24	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				1984.21	
		Cost for 15 cum = a+b+c+d+e+f+g+h				200404.84	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13360.32	
					say	<u>13360.00</u>	
14.1C	(q)	Height 5m to 10m					
Case I		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				100079.00	
(ii)		d) Formwork and staging 30 per cent of (a+b+c)				30023.70	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				26228.70	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				31266.28	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				18759.77	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2063.57	
		Cost for 15 cum = a+b+c+d+e+f+g+h				208421.02	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13894.73	
					say	<u>13895.00</u>	
14.1C	(r)	Height above 10m					
Case I		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				100079.00	
(ii)		d) Formwork and staging 35 per cent of (a+b+c)				35027.65	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				27237.50	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				32468.83	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				19481.30	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2142.94	
		Cost for 15 cum = a+b+c+d+e+f+g+h				216437.22	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				14429.15	
					say	<u>14429.00</u>	
14.1C	Case II	Using Batching Plant, Transit Mixer and Concrete Pump.					
		Unit = cum					
		Taking output = 120 cum					
	a)	Material					
		Cement	tonne	48.790	9100.00	443989.00	M-081
		Coarse sand	cum	54.600	650.00	35490.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
	b)	Labour					
		Mate	day	0.880	551.00	484.88	L-12
		Mason	day	3.000	593.00	1779.00	L-11
		Mazdoor	day	19.000	424.00	8056.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader	hour	6.00	1838.00	11028.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1265.00	18975.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761866.000	
		For formwork and staging add the following:					
14.1C	(i)	For solid slab super-structure, 20-30 per cent of (a+b+c)					
Case II	(p)	Height upto 5m					

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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				761866.00	
		d) Formwork and staging 20 per cent of (a+b+c)				152373.20	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				184310.62	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				219709.96	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				131825.98	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				14500.86	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1464586.62	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				12204.89	
					say	<u>12205.00</u>	
14.1C Case II (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761866.00	
		d) Formwork and staging 25 per cent of (a+b+c)				190466.50	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				191990.23	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				228864.55	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				137318.73	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				15105.06	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1525611.07	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				12713.43	
					say	<u>12713.00</u>	
14.1C Case II (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761866.00	
		d) Formwork and staging 30 per cent of (a+b+c)				228559.80	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				199669.84	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				238019.13	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				142811.48	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				15709.26	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1586635.51	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13221.96	
					say	<u>13222.00</u>	
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				761866.00	
		d) Formwork and staging 25 per cent of (a+b+c)				190466.50	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				191990.23	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				228864.55	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				137318.73	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				15105.06	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1525611.07	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				12713.43	
					say	<u>12713.00</u>	
14.1C Case II (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761866.00	
		d) Formwork and staging 30 per cent of (a+b+c)				228559.80	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				199669.84	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				238019.13	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				142811.48	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				15709.26	

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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				1586635.51	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13221.96	
					say	13222.00	
14.1C	(r)	Height above 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				761866.00	
(ii)	d)	Formwork and staging 35 per cent of (a+b+c)				266653.10	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				207349.45	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				247173.71	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				148304.23	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16313.46	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1647659.95	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13730.50	
					say	13731.00	
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	9100.00	57603.00	M-081
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
		10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
	b)	Labour					
		Mate	day	0.900	551.00	495.90	L-12
		Mason	day	1.500	593.00	889.50	L-11
		Mazdoor	day	21.000	424.00	8904.00	L-13
	c)	Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
		Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum			102172.000		
		For formwork and staging add the following:					
14.1D	(i)	For solid slab super-structure, 18-28 per cent of (a+b+c)					
Case I	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				102172.00	
	d)	Formwork and staging 18 per cent of (a+b+c)				18390.96	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				24305.49	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				28973.69	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				17384.21	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1912.26	
		Cost for 15 cum = a+b+c+d+e+f+g+h				193138.61	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				12875.91	
					say	12876.00	
14.1D	(q)	Height 5m to 10m					
Case I		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				102172.00	
(i)	d)	Formwork and staging 23 per cent of (a+b+c)				23499.56	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				25335.39	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				30201.39	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				18120.83	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1993.29	
		Cost for 15 cum = a+b+c+d+e+f+g+h				201322.46	

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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				13421.50	
					say	<u>13422.00</u>	
14.1D Case I (i)	(r)	Height above 10m Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				102172.00	
	d)	Formwork and staging 28 per cent of (a+b+c)				28608.16	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				26365.28	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				31429.09	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				18857.45	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				2074.32	
		Cost for 15 cum = a+b+c+d+e+f+g+h				209506.30	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13967.09	
					say	<u>13967.00</u>	
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				102172.00	
	d)	Formwork and staging 23 per cent of (a+b+c)				23499.56	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				25335.39	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				30201.39	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				18120.83	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				1993.29	
		Cost for 15 cum = a+b+c+d+e+f+g+h				201322.46	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13421.50	
					say	<u>13422.00</u>	
14.1D Case I (ii)	(q)	Height 5m to 10m Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				102172.00	
	d)	Formwork and staging 28 per cent of (a+b+c)				28608.16	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				26365.28	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				31429.09	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				18857.45	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				2074.32	
		Cost for 15 cum = a+b+c+d+e+f+g+h				209506.30	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13967.09	
					say	<u>13967.00</u>	
14.1D Case I (ii)	(r)	Height above 10m Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				102172.00	
	d)	Formwork and staging 33 per cent of (a+b+c)				33716.76	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				27395.17	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				32656.79	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				19594.07	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				2155.35	
		Cost for 15 cum = a+b+c+d+e+f+g+h				217690.14	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				14512.68	
					say	<u>14513.00</u>	
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				102172.00	
	d)	Formwork and staging 38 per cent of (a+b+c)				38825.36	

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				28425.07	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				33884.49	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				20330.69	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2236.38	
		Cost for 15 cum = a+b+c+d+e+f+g+h				225873.99	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				15058.27	
					say	15058.00	
14.1D Case I (iii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				102172.00	
		d) Formwork and staging 48 per cent of (a+b+c)				49042.56	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				30484.86	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				36339.88	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				21803.93	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2398.43	
		Cost for 15 cum = a+b+c+d+e+f+g+h				242241.66	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				16149.44	
					say	16149.00	
14.1D Case I (iii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				102172.00	
		d) Formwork and staging 58 per cent of (a+b+c)				59259.76	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				32544.64	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				38795.28	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				23277.17	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2560.49	
		Cost for 15 cum = a+b+c+d+e+f+g+h				258609.34	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				17240.62	
					say	17241.00	
Case II		Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit = cum					
		Taking output = 120 cum					
	a)	Material					
		Cement	tonne	50.640	9100.00	460824.00	M-081
		Coarse sand	cum	54.000	650.00	35100.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
	b)	Labour					
		Mate	day	0.880	551.00	484.88	L-12
		Mason	day	3.000	593.00	1779.00	L-11
		Mazdoor	day	19.000	424.00	8056.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader	hour	6.00	1838.00	11028.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1265.00	18975.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				778311.000	
		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					

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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				778311.00	
		d) Formwork and staging 18 per cent of (a+b+c)				140095.98	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				185150.85	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				220711.57	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				132426.94	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				14566.96	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1471263.30	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				12260.53	
					say	<u>12261.00</u>	
14.1D Case II (i)	(q)	Height 5m to 10m <i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				778311.00	
		d) Formwork and staging 23 per cent of (a+b+c)				179011.53	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				192996.22	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				230063.75	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				138038.25	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				15184.21	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1533604.96	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				12780.04	
					say	<u>12780.00</u>	
14.1D Case II (i)	(r)	Height above 10m <i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				778311.00	
		d) Formwork and staging 28 per cent of (a+b+c)				217927.08	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				200841.60	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				239415.94	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				143649.56	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				15801.45	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1595946.63	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13299.56	
					say	<u>13300.00</u>	
14.1D Case II (ii)	(ii)	For T-beam & slab, 23-33 per cent of (a+b+c)					
	(p)	Height upto 5m <i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				778311.00	
		d) Formwork and staging 23 per cent of (a+b+c)				179011.53	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				192996.22	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				230063.75	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				138038.25	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				15184.21	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1533604.96	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				12780.04	
					say	<u>12780.00</u>	
14.1D Case II (ii)	(q)	Height 5m to 10m <i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				778311.00	
		d) Formwork and staging 28 per cent of (a+b+c)				217927.08	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				200841.60	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				239415.94	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				143649.56	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				15801.45	

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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				1595946.63	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13299.56	
					say	<u>13300.00</u>	
14.1D	(r)	Height above 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				778311.00	
(ii)	d)	Formwork and staging 33 per cent of (a+b+c)				256842.63	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				208686.97	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				248768.12	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				149260.87	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16418.70	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1658288.29	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13819.07	
					say	<u>13819.00</u>	
14.1D	(iii)	For box girder and balanced cantilever, 38-58 per cent of cost of concrete.					
Case II	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				778311.00	
	d)	Formwork and staging 38 per cent of (a+b+c)				295758.18	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				216532.35	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				258120.31	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				154872.18	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				17035.94	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1720629.96	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				14338.58	
					say	<u>14339.00</u>	
14.1D	(q)	Height 5m to 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				778311.00	
(iii)	d)	Formwork and staging 48 per cent of (a+b+c)				373589.28	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				232223.10	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				276824.68	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				166094.81	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				18270.43	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1845313.30	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				15377.61	
					say	<u>15378.00</u>	
14.1D	(r)	Height above 10m					
Case II		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				778311.00	
(iii)	d)	Formwork and staging 58 per cent of (a+b+c)				451420.38	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				247913.85	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				295529.05	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				177317.43	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				19504.92	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1969996.63	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				16416.64	
					say	<u>16417.00</u>	
14.1	E	PSC Grade M-40					
Case		Using concrete mixer.					
		Unit = 1 cum					
		Taking output = 15 cum					
	a)	Material					
		Cement	tonne	6.450	9100.00	58695.00	M-081

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Coarse sand	cum	6.750	650.00	4387.50	M-005
		20 mm Aggregate	cum	8.100	1900.00	15390.00	M-053
		10 mm Aggregate	cum	5.400	1800.00	9720.00	M-051
		Admixture @ 0.4 per cent of cement	kg	25.800	64.00	1651.20	M-180
		b) Labour					
		Mate	day	0.960	551.00	528.96	L-12
		Mason	day	2.000	593.00	1186.00	L-11
		Mazdoor	day	22.000	424.00	9328.00	L-13
		c) Machinery					
		Concrete mixer (cap. 0.40/0.28 cum)	hour	6.000	291.00	1746.00	P&M-009
		Generator 33 KVA	hour	6.000	506.00	3036.00	P&M-079
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		105669.000			
		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				105669.00	
	d)	Formwork and staging 20 per cent of (a+b+c)				21133.80	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				25563.44	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				30473.25	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				18283.95	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				2011.23	
		Cost for 15 cum = a+b+c+d+e+f+g+h				203134.67	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				13542.31	
					say	<u>13542.00</u>	
14.1E Case I (i)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				105669.00	
	d)	Formwork and staging 25 per cent of (a+b+c)				26417.25	
	e)	GST @ 0.2016 on (a+b+c+d)				26628.59	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				31742.97	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				19045.78	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				2095.04	
		Cost for 15 cum = a+b+c+d+e+f+g+h				211598.63	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				14106.58	
					say	<u>14107.00</u>	
14.1E Case I (i)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				105669.00	
	d)	Formwork and staging 30 per cent of (a+b+c)				31700.70	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				27693.73	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				33012.69	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				19807.61	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				2178.84	
		Cost for 15 cum = a+b+c+d+e+f+g+h				220062.57	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				14670.84	
					say	<u>14671.00</u>	
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				105669.00	

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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)				26417.25	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				26628.59	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				31742.97	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				19045.78	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2095.04	
		Cost for 15 cum = a+b+c+d+e+f+g+h				211598.63	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				14106.58	
					say	14107.00	
14.1E Case I (ii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				105669.00	
		d) Formwork and staging 30 per cent of (a+b+c)				31700.70	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				27693.73	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				33012.69	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				19807.61	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2178.84	
		Cost for 15 cum = a+b+c+d+e+f+g+h				220062.57	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				14670.84	
					say	14671.00	
14.1E Case I (ii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				105669.00	
		d) Formwork and staging 35 per cent of (a+b+c)				36984.15	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				28758.88	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				34282.41	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				20569.44	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				2262.64	
		Cost for 15 cum = a+b+c+d+e+f+g+h				228526.52	
		Rate per cum = (a+b+c+d+e+f+g+h)/15				15235.10	
					say	15235.00	
14.1E Case II		Using Batching Plant, Transit Mixer and Concrete Pump					
		Unit = cum					
		Taking output = 120 cum					
	a)	Material					
		Cement	tonne	51.600	9100.00	469560.00	M-081
		Coarse sand	cum	54.000	650.00	35100.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
		Admixture @ 0.4 per cent of cement	kg	206.400	64.00	13209.60	M-180
	b)	Labour					
		Mate	day	0.940	551.00	517.94	L-12
		Mason	day	3.500	593.00	2075.50	L-11
		Mazdoor	day	20.000	424.00	8480.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader	hour	6.00	1838.00	11028.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1265.00	18975.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				801011.000	

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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					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				801011.00	
	d)	Formwork and staging 18 per cent of (a+b+c)				144181.98	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				190550.90	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				227148.78	
	g)	Contractor's profit @ 10 % on (a+b+c+d+e+f)				136289.27	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				14991.82	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1514173.75	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				12618.11	
					say	<u>12618.00</u>	
14.1E Case II (i)	(q)	Height 5m to 10m					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				801011.00	
	d)	Formwork and staging 23 per cent of (a+b+c)				184232.53	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				198625.10	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				236773.73	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				142064.24	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				15627.07	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1578333.67	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13152.78	
					say	<u>13153.00</u>	
14.1E Case II (i)	(r)	Height above 10m					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				801011.00	
	d)	Formwork and staging 28 per cent of (a+b+c)				224283.08	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				206699.29	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				246398.67	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				147839.20	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16262.31	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1642493.55	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13687.45	
					say	<u>13687.00</u>	
14.1E Case II	(ii)	For T-beam & slab, 23-33 per cent of (a+b+c)					
	(p)	Height upto 5m					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				801011.00	
	d)	Formwork and staging 23 per cent of (a+b+c)				184232.53	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				198625.10	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				236773.73	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				142064.24	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				15627.07	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1578333.67	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13152.78	
					say	<u>13153.00</u>	

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1E	(q)	Height 5m to 10m					
Case II (ii)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				801011.00	
	d)	Formwork and staging 28 per cent of (a+b+c)				224283.08	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				206699.29	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				246398.67	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				147839.20	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16262.31	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1642493.55	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13687.45	
					say	<u>13687.00</u>	
14.1E	(r)	Height above 10m					
Case II (ii)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				801011.00	
	d)	Formwork and staging 33 per cent of (a+b+c)				264333.63	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				214773.48	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				256023.62	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				153614.17	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16897.56	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1706653.46	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				14222.11	
					say	<u>14222.00</u>	
14.1E	(iii)	For cast-in-situ box girder, segment construction and balanced cantilever, 38-58 per cent of cost of concrete.					
Case II	(p)	Height upto 5m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				801011.00	
	d)	Formwork and staging 38 per cent of (a+b+c)				304384.18	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				222847.67	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				265648.57	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				159389.14	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				17532.81	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1770813.37	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				14756.78	
					say	<u>14757.00</u>	
14.1E	(q)	Height 5m to 10m					
Case II (iii)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				801011.00	
	d)	Formwork and staging 48 per cent of (a+b+c)				384485.28	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				238996.05	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				284898.47	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				170939.08	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				18803.30	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1899133.18	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				15826.11	
					say	<u>15826.00</u>	
14.1E	(r)	Height above 10m					
Case II (iii)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				801011.00	
	d)	Formwork and staging 58 per cent of (a+b+c)				464586.38	

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				255144.43	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				304148.36	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				182489.02	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				20073.79	
		Cost for 120 cum = a+b+c+d+e+f+g+h				2027452.98	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				16895.44	
					say	16895.00	
14.1F	F	PSC Grade M-45					
		Unit = 1 cum					
		Taking output = 120 cum					
	a)	Material					
		Cement	tonne	55.800	9100.00	507780.00	M-081
		Coarse sand	cum	54.000	650.00	35100.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
		Admixture @ 0.4 per cent of cement	kg	223.200	64.00	14284.80	M-180
	b)	Labour					
		Mate	day	0.940	551.00	517.94	L-12
		Mason	day	3.500	593.00	2075.50	L-11
		Mazdoor	day	20.000	424.00	8480.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader	hour	6.00	1838.00	11028.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto 1 Km	hour	15.00	1265.00	18975.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		840306.000			
		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				840306.00	
	d)	Formwork and staging 16 per cent of (a+b+c)				134448.96	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				196510.60	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				234253.11	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				140551.87	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				15460.71	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1561531.25	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13012.76	
					say	13013.00	
14.1F	(q)	Height 5m to 10m					
(i)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				840306.00	
	d)	Formwork and staging 21 per cent of (a+b+c)				176464.26	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				204980.88	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				244350.23	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				146610.14	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16127.12	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1628838.63	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13573.66	
					say	13574.00	

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
14.1F	(r)	Height above 10m					
(i)		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				840306.00	
	d)	Formwork and staging 26 per cent of (a+b+c)				218479.56	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				213451.17	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				254447.35	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				152668.41	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16793.52	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1696146.01	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				14134.55	
					say	<u>14135.00</u>	
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					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				840306.00	
	d)	Formwork and staging 21 per cent of (a+b+c)				176464.26	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				204980.88	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				244350.23	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				146610.14	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16127.12	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1628838.63	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				13573.66	
					say	<u>13574.00</u>	
14.1F	(q)	Height 5m to 10m					
(ii)		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				840306.00	
	d)	Formwork and staging 26 per cent of (a+b+c)				218479.56	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				213451.17	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				254447.35	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				152668.41	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				16793.52	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1696146.01	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				14134.55	
					say	<u>14135.00</u>	
14.1F	(r)	Height above 10m					
(ii)		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				840306.00	
	d)	Formwork and staging 31 per cent of (a+b+c)				260494.86	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				221921.45	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				264544.46	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				158726.68	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				17459.93	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1763453.38	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				14695.44	
					say	<u>14695.00</u>	
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					
		<i>Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum</i>				840306.00	

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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)				302510.16	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				230391.74	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				274641.58	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				164784.95	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				18126.34	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1830760.77	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				15256.34	
					say	15256.00	
14.1F (iii)	(q)	Height 5m to 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				840306.00	
		d) Formwork and staging 46 per cent of (a+b+c)				386540.76	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				247332.31	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				294835.81	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				176901.49	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				19459.16	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1965375.53	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				16378.13	
					say	16378.00	
14.1F (iii)	(r)	Height above 10m					
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				840306.00	
		d) Formwork and staging 56 per cent of (a+b+c)				470571.36	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				264272.88	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				315030.05	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				189018.03	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				20791.98	
		Cost for 120 cum = a+b+c+d+e+f+g+h				2099990.30	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				17499.92	
					say	17500.00	
14.1	G	PSC Grade M-50					
		Unit = 1 cum					
		Taking output = 120 cum					
	a)	Material					
		Cement	tonne	58.800	9100.00	535080.00	M-081
		Coarse sand	cum	54.000	650.00	35100.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
		Admixture @ 0.4 per cent of cement	kg	235.200	64.00	15052.80	M-180
	b)	Labour					
		Mate	day	0.940	551.00	517.94	L-12
		Mason	day	3.500	593.00	2075.50	L-11
		Mazdoor	day	20.000	424.00	8480.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader	hour	6.00	1838.00	11028.00	P&M-017
		Transit Mixer (capacity 4.0 cu.m)					
		Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1265.00	18975.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				868374.000	

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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				868374.00	
	d)	Formwork and staging 35 per cent of (a+b+c)				303930.90	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				236336.67	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				281728.31	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				169036.99	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				18594.07	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1878000.94	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				15650.01	
					say	15650.00	
14.1G	(q)	Height 5m to 10m					
(i)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				868374.00	
	d)	Formwork and staging 45 per cent of (a+b+c)				390768.30	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				253843.09	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				302597.08	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				181558.25	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				19971.41	
		Cost for 120 cum = a+b+c+d+e+f+g+h				2017112.13	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				16809.27	
					say	16809.00	
14.1G	(r)	Height above 10m					
(i)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				868374.00	
	d)	Formwork and staging 55 per cent of (a+b+c)				477605.70	
	e)	GST (multiplying factor 0.2016) on (a+b+c+d)				271349.51	
	f)	Overhead charges @ 20 % on (a+b+c+d+e)				323465.84	
	g)	Contractor's profit @ 10 % on (a+b+c+d+f)				194079.51	
	h)	Cess @ 1% on (a+b+c+d+e+f+g)				21348.75	
		Cost for 120 cum = a+b+c+d+e+f+g+h				2156223.31	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				17968.53	
					say	17969.00	
14.1	H	PSC Grade M- 55					
		Unit = 1 cum					
		Taking output = 120 cum					
	a)	Material					
		Cement	tonne	63.500	9100.00	577850.00	M-081
		Coarse sand	cum	54.000	650.00	35100.00	M-004
		20 mm Aggregate	cum	64.800	1900.00	123120.00	M-053
		10 mm Aggregate	cum	43.200	1800.00	77760.00	M-051
		Admixture @ 0.4 per cent of cement	kg	254.000	64.00	16256.00	M-180
	b)	Labour					
		Mate	day	0.940	551.00	517.94	L-12
		Mason	day	3.500	593.00	2075.50	L-11
		Mazdoor	day	20.000	424.00	8480.00	L-13
	c)	Machinery					
		Batching Plant @ 20 cum/hour	hour	6.00	3200.00	19200.00	P&M-002
		Generator 100 KVA	hour	6.00	938.00	5628.00	P&M-080
		Loader	hour	6.00	1838.00	11028.00	P&M-017

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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 upto 1 Km	hour	15.00	1265.00	18975.00	P&M-049
		Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	80.00	0.00	Lead =0 km & P&M-050
		Concrete Pump	hour	6.00	2726.00	16356.00	P&M-007
		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		912347.000			
		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				912347.00	
		d) Formwork and staging 35 per cent of (a+b+c)				319321.45	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				248304.36	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				295994.56	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				177596.74	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				19535.64	
		Cost for 120 cum = a+b+c+d+e+f+g+h				1973099.75	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				16442.50	
					say	16443.00	
14.1H	(q)	Height 5m to 10m					
(i)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				912347.00	
		d) Formwork and staging 45 per cent of (a+b+c)				410556.15	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				266697.28	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				317920.09	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				190752.05	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				20982.73	
		Cost for 120 cum = a+b+c+d+e+f+g+h				2119255.30	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				17660.46	
					say	17660.00	
14.1H	(r)	Height above 10m					
(i)		Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				912347.00	
		d) Formwork and staging 55 per cent of (a+b+c)				501790.85	
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				285090.19	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				339845.61	
		g) Contractor's profit @ 10 % on (a+b+c+d+f)				203907.37	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				22429.81	
		Cost for 120 cum = a+b+c+d+e+f+g+h				2265410.83	
		Rate per cum = (a+b+c+d+e+f+g+h)/120				18878.42	
					say	18878.00	
<p>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.</p>							

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		<p>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.</p> <p>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.</p>					
14.2	1600	<p>Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications</p> <p>Unit = 1 MT</p> <p>Taking output = 1 MT</p> <p>a) Material</p> <p>HYSD bars including 5 per cent for laps and wastage tonne 1.050 67000.00 70350.00 M-082</p> <p>Binding wire Kg 8.000 105.00 840.00 M-072</p> <p>b) Labour for cutting, bending, tying and placing in position</p> <p>Mate day 0.440 551.00 242.44 L-12</p> <p>Blacksmith day 3.000 593.00 1779.00 L-02</p> <p>Mazdoor day 8.000 424.00 3392.00 L-13</p> <p>Basic Cost of Labour & Material (a+b) 76604.000</p> <p>c) GST (multiplying factor 0.2016) on (a+b) 15443.25</p> <p>d) Overhead charges @ 20 % on (a+b+c) 18409.34</p> <p>e) Contractor's profit @ 10 % on (a+b+c+d) 11045.60</p> <p>f) Cess @ 1% on (a+b+c+d+e) 1215.02</p> <p>Rate per MT = a+b+c+d+e+f 122716.65</p> <p style="text-align: right;">say 122717.00</p>					
14.3	1800	<p>High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications</p> <p>Unit = 1 MT</p> <p>Taking output = 0.377 MT</p> <p>Details of cost for 12T13 strand 40 m long cable (weight = 0.377 MT)</p> <p>a) Material</p> <p>H.T. Strand @ 9.42 kg/m including 2 per cent for wastage and extra length for jacking tonne 0.390 74697.00 29131.83 M-119</p> <p>Sheathing duct ID 66 mm along with 5 per cent extra length 40 x 1.05 = 42 m. metre 42.000 116.00 4872.00 M-165</p> <p>Tube anchorage set complete with bearing plate, permanent wedges etc each 2.000 4894.00 9788.00 M-187</p> <p>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 9100.00 1183.00 M-081</p> <p>Add 0.50 per cent cost of material for Spacers, Insulation tape and miscellaneous items 2248.74</p> <p>b) Labour</p> <p>i) For making and fixing cables, anchorages</p> <p>Mate day 0.160 551.00 88.16 L-12</p> <p>Blacksmith day 1.000 593.00 593.00 L-02</p> <p>Mazdoor day 3.000 424.00 1272.00 L-13</p>					

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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	551.00	27.55	L-12
		Prestressing operator / Fitter	day	0.250	593.00	148.25	L-08
		Mazdoor	day	1.000	424.00	424.00	L-13
		iii) For grouting					
		Mate/Supervisor	day	0.050	551.00	27.55	L-12
		Mason	day	0.250	593.00	148.25	L-11
		Mazdoor	day	1.000	424.00	424.00	L-13
		c) Machinery					
		Stressing jack with pump	hour	2.500	170.00	425.00	P&M-040
		Grouting pump with agitator	hour	1.000	193.00	193.00	M-111
		Generator 33 KVA.	hour	3.500	506.00	1771.00	P&M-079
		d) GST (multiplying factor 0.2016) on (a+b+c)				10637.49	
		e) Overhead charges @ 20 % on (a+b+c+d)				12680.56	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				7608.34	
		g) Cess @ 1% on (a+b+c+d+e+f)				836.92	
		Cost for 0.377 MT (a+b+c+d+e+f+g)				84528.64	
		Rate per MT = (a+b+c+d+e+f+g)/0.377				224213.90	
						say 224214.00	
		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	cum	1.000	6349.00	6349.00	Item 14.1(C)
		Refer relevant item of concrete in Item 14.1 (Excluding formwork and excluding GST, OH, CP & Cess)					
		HYSD bar reinforcement Rate as per item No 14.2(Excluding formwork and excluding GST, OH, CP & Cess)	tonne	0.080	76604.00	6128.32	Item 14.2 A
		b) Labour					
		Mazdoor for cleaning deck slab concrete surface.	day	0.150	424.00	63.60	L-13
		c) GST @ 0.2016 on (a+b)				2528.25	
		d) Overhead charges @ 20 % on (a+b+c)				3013.83	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1808.30	
		f) Cess @ 1% on (a+b+c+d+e)				198.91	
		Rate per cum (a+b+c+d+e+f)				20090.21	
						say 20090.00	
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	551.00	269.99	L-12

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor	day	11.000	424.00	4664.00	L-13
		Mazdoor (Skilled)	day	1.250	508.00	635.00	L-15
		b) Machinery					
		Mechanical broom @ 1250 sqm per hour	hour	0.060	473.00	28.38	P&M-031
		Air compressor 250 cfm	hour	0.060	658.00	39.48	P&M-001
		Mastic cooker 1 tonne capacity	hour	6.000	135.00	810.00	P&M-030
		Bitumen boiler 1500 litres capacity	hour	6.000	348.00	2088.00	P&M-005
		Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	530.00	530.00	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. $2 \times 10.2/100 = 0.204$	tonne	0.200	57924.00	11584.80	M-074
		ii) Crusher stone dust @ 31.9 per cent by weight of mix = $2 \times 31.9/100 = 0.638$ tonnes = $0.638/1.625 = 0.39$	cum	0.390	700.00	273.00	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 = $2 \times 17.92/100 = 0.36$	tonne	0.360	15000.00	5400.00	M-188
		iv) Coarse aggregates 9.5 mm to 3.35 mm size @ 40 per cent by weight of mix = $2 \times 40/100 = 0.8$ MT = $0.8/1.456 = 0.55$	cum	0.550	1800.00	990.00	M-051
		v) Pre-coated stone chips of 9.5 mm nominal size for skid resistance = $72.46 \times 0.005/10 = 0.036$	cum	0.040	2107.00	84.28	M-142
		vi) Bitumen for coating of chips @ 2 per cent by weight = $0.036 \times 1.456 \times 2/100 = 0.001048$ MT = 1.05kg	kg	1.050	57.92	60.82	M-074/1000
		d) GST (multiplying factor 0.2016) on (a+b+c)				5535.48	
		e) Overhead charges @ 20 % on (a+b+c+d)				6598.65	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				3959.19	
		g) Cess @ 1% on (a+b+c+d+e+f)				435.51	
		Cost for 72.46 sqm = a+b+c+d+e+f+g				43986.58	
		Rate per sqm = (a+b+c+d+e+f+g)/72.46				607.05	
					say	<u>607.00</u>	

- 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.

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.	
14.6	2703, 1500, 1600 & 1700	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.						
		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 cum 4.090 6349.00 25967.41					Item 14.1(C)	
		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).						
		Add 5 per cent of above cost for form work for casting in casting yard.					1298.37	
		HYSD bar reinforcement Rate as per item No 14.2(Excluding formwork and excluding GST, OH, CP & Cess) tonne 0.870 76604.00 66645.48					Item 14.2 A	
Refer MoRTH SD / 202.								
Add 5 per cent of (a) for handling and fixing of precast panels in position					4695.56			
b) GST (multiplying factor 0.2016) on (a) 19879.13								
c) Overhead charges @ 20 % on (a+b) 23697.19								
d) Contractor's profit @ 10 % on (a+b+c) 14218.31								
e) Cess @ 1% on (a+b+c+d) 1564.01								
Rate for 48 m (a+b+c+d+e) 157965.46								
Rate per metre (a+b+c+d+e)/48 3290.95								
					say	3291.00		
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						

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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 concrete M30 Grade	cum	4.090	6349.00	25967.41	Item 14.1(C)
		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 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.				3116.09	
		HYSD bar reinforcement Rate as per item No 14.2(Excluding formwork and excluding GST, OH, CP & Cess)	tonne	0.870	76604.00	66645.48	Item 14.2 A
		refer MoRTH SD / 202.					
		b) GST (multiplying factor 0.2016) on (a)				19298.96	
		c) Overhead charges @ 20 % on (a+b)				23005.59	
		d) Contractor's profit @ 10 % on (a+b+c)				13803.35	
		e) Cess @ 1% on (a+b+c+d)				1518.37	
		Rate for 48 m (a+b+c+d+e)				153355.25	
		Rate per metre (a+b+c+d+e)/48				3194.90	
					say	<u>3195.00</u>	
		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	50728.00	149647.60	M-179
		2) MS Flat = 0.964 x 1.05 = 1.012 MT	tonne	1.010	50728.00	51235.28	M-179
		3) MS bars = 0.17 x 1.05 = 0.180 MT	tonne	0.180	50728.00	9131.04	M-179
		4) MS bolts, nuts and washers	tonne	0.150	120000.00	18000.00	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				11400.70	
		Add for cost of concrete for fixing vertical posts in the performed recess @ 1 per cent of cost of material.				2280.14	

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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.				2280.14	
		b) Labour					
		Mate	day	2.800	551.00	1542.80	L-12
		Mazdoor (Skilled)	day	30.000	508.00	15240.00	L-15
		Mazdoor	day	40.000	424.00	16960.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				55987.89	
		d) Overhead charges @ 20 % on (a+b+c)				66741.12	
		e) Contractor's profit @ 10 % on (a+b+c+d)				40044.67	
		f) Cess @ 1% on (a+b+c+d+e)				4404.91	
		Cost for 100 m steel railing = a+b+c+d+e+f				444896.29	
		Rate per metre (a+b+c+d+e+f)/100				4448.96	
					say	4449.00	
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	Kg	4.000	71.00	284.00	M-087/1000
		GI pipe 100mm dia	metre	6.000	43.00	258.00	M-056
		GI bolt 10 mm Dia	each	6.000	44.60	267.60	M-110
		Galvanised MS flat clamp	each	2.000	38.00	76.00	M-101
		b) Labour					
		For fabrication					
		Mate	day	0.020	551.00	11.02	L-12
		Skilled (Blacksmith, welder etc.)	day	0.020	593.00	11.86	L-02
		Mazdoor	day	0.020	424.00	8.48	L-13
		For fixing in position					
		Mate	day	0.010	551.00	5.51	L-12
		Mason	day	0.010	593.00	5.93	L-11
		Mazdoor	day	0.200	424.00	84.80	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.				50.66	
		c) GST (multiplying factor 0.2016) on (a+b)				214.47	
		d) Overhead charges @ 20 % on (a+b+c)				255.67	
		e) Contractor's profit @ 10 % on (a+b+c+d)				153.40	
		f) Cess @ 1% on (a+b+c+d+e)				16.87	
		Rate per metre (a+b+c+d+e+f)				1704.27	
					say	1704.00	
		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	9011.00	9011.00	Item 12.8 (A)
		Rate per cum			say	9011.00	

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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 concrete M30 Grade	cum	1.000	6343.00	6343.00	Item 12.8 (G)
		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)					
		(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.				126.86	
		HYSD bar reinforcement Rate as per item No 14.2 (Excluding GST, OH, CP & Cess)	tonne	0.050	76604.00	3830.20	Item 14.2 A
		b) GST (multiplying factor 0.2016) on (a)				2076.49	
		c) Overhead charges @ 20 % on (a+b)				2475.31	
		d) Contractor's profit @ 10 % on (a+b+c)				1485.19	
		e) Cess @ 1% on (a+b+c+d)				163.37	
		Rate per cum (a+b+c+d+e)				16500.42	
					say	<u>16500.00</u>	
		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	551.00	5.51	L-12
		Painter	day	0.250	593.00	148.25	L-18
		Mazdoor (Skilled)	day	0.250	508.00	127.00	L-15
		b) Material					
		Water based paint of approved quality for cement concrete surface	Litres	5.000	140.00	700.00	M-190
		c) GST (multiplying factor 0.2016) on (a+b)				197.72	
		d) Overhead charges @ 20 % on (a+b+c)				235.70	
		e) Contractor's profit @ 10 % on (a+b+c+d)				141.42	
		f) Cess @ 1% on (a+b+c+d+e)				15.56	
		Cost for 10 sqm (a+b+c+d+e+f)				1571.16	
		Rate per sqm (a+b+c+d+e+f)/10				157.12	
					say	<u>157.00</u>	
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.					

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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	551.00	11.02	L-12
		Mazdoor	day	0.400	424.00	169.60	L-13
		Mazdoor (Skilled)	day	0.200	508.00	101.60	L-15
		b) Material					
		Galvanised M.S plate 200 mm wide, 12 mm thick @ 94.20 kg/sqm including 5 per cent	kg	237.500	63.14	14995.75	M-060/1000
		Add 1 per cent of cost of steel plate cutting, welding consumables and galvanised				149.96	
		c) GST (multiplying factor 0.2016) on (a+b)				3110.27	
		d) Overhead charges @ 20 % on (a+b+c)				3707.64	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2224.58	
		f) Cess @ 1% on (a+b+c+d+e)				244.70	
		Cost for 12 m = (a+b+c+d+e+f)				24715.12	
		Rate per m = (a+b+c+d+e+f)/12				2059.59	
					say	<u>2060.00</u>	
		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 referred 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	551.00	22.04	L-12
		Mazdoor	day	0.500	424.00	212.00	L-13
		Mazdoor (Skilled)	day	0.500	508.00	254.00	L-15
		b) Material					
		Copper plate - 12m long x 250 mm wide	kg	55.000	850.00	46750.00	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 (multiplying factor 0.2016) on (a+b)				9523.19	
		d) Overhead charges @ 20 % on (a+b+c)				11352.25	
		e) Contractor's profit @ 10 % on (a+b+c+d)				6811.35	
		f) Cess @ 1% on (a+b+c+d+e)				749.25	
		Cost for 12 m = (a+b+c+d+e+f)				75674.08	
		Rate per m = (a+b+c+d+e+f)/12				6306.17	
					say	<u>6306.00</u>	
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	551.00	5.51	L-12
		Mazdoor	day	0.100	424.00	42.40	L-13
		Mazdoor (Skilled)	day	0.100	508.00	50.80	L-15
		b) Material					
		20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	3.000	798.00	2394.00	M-084

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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 (multiplying factor 0.2016) on (a+b)				502.53	
		d) Overhead charges @ 20 % on (a+b+c)				599.05	
		e) Contractor's profit @ 10 % on (a+b+c+d)				359.43	
		f) Cess @ 1% on (a+b+c+d+e)				39.54	
		Cost for 12 m = (a+b+c+d+e+f)				3993.26	
		Rate per m = (a+b+c+d+e+f)/12				332.77	
					say	<u>333.00</u>	
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.					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
	a)	Labour					
		Mate	day	0.010	551.00	5.51	L-12
		Mazdoor	day	0.200	424.00	84.80	L-13
		Mazdoor (Skilled)	day	0.100	508.00	50.80	L-15
	b)	Material					
		Premoulded joint filler 12 m long, 20 mm thick and 300 mm deep.	sqm	3.600	950.00	3420.00	M-141
		c) GST (multiplying factor 0.2016) on (a+b)				717.92	
		d) Overhead charges @ 20 % on (a+b+c)				855.81	
		e) Contractor's profit @ 10 % on (a+b+c+d)				513.48	
		f) Cess @ 1% on (a+b+c+d+e)				56.48	
		Cost for 12 m = (a+b+c+d+e+f)				5704.80	
		Rate per m = (a+b+c+d+e+f)/12				475.40	
					say	<u>475.00</u>	
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					
		<i>Unit = Running meter</i>					
		<i>Taking output = 12 m</i>					
		12m long x 100 mm wide x 10mm deep recess					
	a)	Labour					
		Mate	day	0.020	551.00	11.02	L-12
		Mazdoor	day	0.500	424.00	212.00	L-13
		Mazdoor (Skilled)	day	0.100	508.00	50.80	L-15
	b)	Material					
		Sand	cum	0.010	650.00	6.50	M-005
		Volume 12 x 0.1 x 0.01 = 0.012 cum					
		Weight 0.012 x 1400 = 16.8kg					
		Bitumen	cum	0.000	57924.00	0.00	M-074
		16.8 x 0.06 = 1 kg					
		c) GST (multiplying factor 0.2016) on (a+b)				56.51	
		d) Overhead charges @ 20 % on (a+b+c)				67.37	
		e) Contractor's profit @ 10 % on (a+b+c+d)				40.42	
		f) Cess @ 1% on (a+b+c+d+e)				4.45	
		Cost for 12 m = (a+b+c+d+e+f)				449.07	
		Rate per m = (a+b+c+d+e+f)/12				37.42	
					say	<u>37.00</u>	

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

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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.					
		<i>Unit = Running meter</i> <i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.050	551.00	27.55	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		Mazdoor (Skilled)	day	0.300	508.00	152.40	L-15
		b) Material					
		Crushed stone aggregate 12.5 mm nominal size	cum	0.750	1820.00	1365.00	M-052
		Polymer modified bitumen	kg	77.500	58.00	4495.00	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	228.00	25764.00	M-103
		Add 1 per cent for welding and foam caulking/backer rod and other incidentals.				322.28	
		c) Machinery					
		Mastic cooker 1 tonne capacity	hour	1.000	135.00	135.00	P&M-030
		Smooth 3-wheeled steel roller 8-10 capacity	hour	0.500	783.00	391.50	P&M-044
		d) GST (multiplying factor 0.2016) on (a+b+c)				6668.27	
		e) Overhead charges @ 20 % on (a+b+c+d)				7949.00	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				4769.40	
		g) Cess @ 1% on (a+b+c+d+e+f)				524.63	
		Cost for 12 m asphalt plug joint = (a+b+c+d+e+f+g)				52988.03	
		Rate per m = (a+b+c+d+e+f+g)/12				4415.67	
					say	<u>4416.00</u>	
		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.					
		<i>Unit = Running meter</i> <i>Taking output = 12 m</i>					
		a) Labour					
		Mate	day	0.060	551.00	33.06	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		Mazdoor (Skilled)	day	0.500	508.00	254.00	L-15

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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	11591.00	139092.00	M-093
		Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				6954.60	
		c) GST (multiplying factor 0.2016) on (a+b)				29586.34	
		d) Overhead charges @ 20 % on (a+b+c)				35268.80	
		e) Contractor's profit @ 10 % on (a+b+c+d)				21161.28	
		f) Cess @ 1% on (a+b+c+d+e)				2327.74	
		Cost for 12 m = (a+b+c+d+e+f)				235101.82	
		Rate per m = (a+b+c+d+e+f)/12				19591.82	
					say	<u>19592.00</u>	
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	551.00	22.04	L-12
		Mazdoor	day	0.600	424.00	254.40	L-13
		Mazdoor (Skilled)	day	0.300	508.00	152.40	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	228.00	101688.00	M-103
		Add 5 per cent of cost of above for structural steel for anchorage, welding and other incidentals.				5105.84	
		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	metre	12.000	5151.00	61812.00	M-143
		Add 1 per cent of cost of sealing element for lubricant-cum-adhesive and other consumables.				618.12	
		c) GST (multiplying factor 0.2016) on (a+b)				34202.00	
		d) Overhead charges @ 20 % on (a+b+c)				40770.96	
		e) Contractor's profit @ 10 % on (a+b+c+d)				24462.58	
		f) Cess @ 1% on (a+b+c+d+e)				2690.88	
		Cost for 12 m = (a+b+c+d+e+f)				271779.22	
		Rate per m = (a+b+c+d+e+f)/12				22648.27	
					say	<u>22648.00</u>	

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Sr No	Ref. to MoRTH/D SR Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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- 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	551.00	27.55			L-12
Mazdoor	day	1.000	424.00	424.00			L-13
Mazdoor (Skilled)	day	0.250	508.00	127.00			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	14167.00	170004.00			M-178
Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				8529.13			
c) GST (multiplying factor 0.2016) on (a+b)						36108.91	
d) Overhead charges @ 20 % on (a+b+c)						43044.12	
e) Contractor's profit @ 10 % on (a+b+c+d)						25826.47	
f) Cess @ 1% on (a+b+c+d+e)						2840.91	
Cost for 12 m = (a+b+c+d+e+f)						286932.09	
Rate per m = (a+b+c+d+e+f)/12						23911.01	
					say	23911.00	

- 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	551.00	33.06			L-12
Mazdoor	day	1.000	424.00	424.00			L-13
Mazdoor (Skilled)	day	0.400	508.00	203.20			L-15

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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	244696.00	2936352.00	M-127
		c) GST (multiplying factor 0.2016) on (a+b)				592101.67	
		d) Overhead charges @ 20 % on (a+b+c)				705822.79	
		e) Contractor's profit @ 10 % on (a+b+c+d)				423493.67	
		f) Cess @ 1% on (a+b+c+d+e)				46584.30	
		Cost for 12 m Modular strip/box seal joint = (a+b+c+d+e+f)				4705014.69	
		Rate per m = (a+b+c+d+e+f)/12				392084.56	
					say	<u>392085.00</u>	
		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	551.00	38.57	L-12
		Mazdoor	day	1.250	424.00	530.00	L-13
		Mazdoor (Skilled)	day	0.500	508.00	254.00	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	270454.00	3245448.00	M-128
		c) GST (multiplying factor 0.2016) on (a+b)				654448.15	
		d) Overhead charges @ 20 % on (a+b+c)				780143.74	
		e) Contractor's profit @ 10 % on (a+b+c+d)				468086.25	
		f) Cess @ 1% on (a+b+c+d+e)				51489.49	
		Cost for 12 m Modular strip/box seal joint = (a+b+c+d+e+f)				5200438.20	
		Rate per m = (a+b+c+d+e+f)/12				433369.85	
					say	<u>433370.00</u>	
		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.

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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.					
		<i>Unit = cum</i>					
		<i>Taking output = 1 cum</i>					
		a) Material					
		Stone	cum	1.000	893.00	893.00	M-003
		Stone Spalls	cum	0.200	300.00	60.00	M-008
		b) Labour					
		Mate	day	0.040	551.00	22.04	L-12
		Mason	day	0.350	593.00	207.55	L-11
		Mazdoor *	day	0.750	424.00	318.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				302.52	
		d) Overhead charges @ 20 % on (a+b+c)				360.62	
		e) Contractor's profit @ 10 % on (a+b+c+d)				216.37	
		f) Cess @ 1% on (a+b+c+d+e)				23.80	
		Rate per cum = (a+b+c+d+e+f)				2403.90	
					say	<u>2404.00</u>	
		* 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.					
		<i>Unit = cum</i>					
		<i>Taking output = 3 mx1.5mx1.25m = 5.63 cum</i>					
		a) Material					
		4mm GI wire crates woven in mesh size of 100 mm x 100 mm.	sqm	22.000	191.00	4202.00	M-102
		Stone	cum	5.630	893.00	5027.59	M-003
		Stone Spalls	cum	1.130	300.00	339.00	M-008
		b) Labour					
		Mate	day	0.180	551.00	99.18	L-12
		Mazdoor (Skilled)	day	1.500	508.00	762.00	L-15
		Mazdoor	day	*3.00	424.00	1272.0	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				2359.08	
		d) Overhead charges @ 20 % on (a+b+c)				2812.17	
		e) Contractor's profit @ 10 % on (a+b+c+d)				1687.30	
		f) Cess @ 1% on (a+b+c+d+e)				185.60	
		Cost for 5.63 cum = a+b+c+d+e+f				18745.92	
		Rate per cum = (a+b+c+d+e+f)/5.63				3329.65	
					say	<u>3330.00</u>	
		* Including excavation for trimming for preparation of bed.					
		Note Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.					

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RIVER TRAINING AND PROTECTION WORKS

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. <i>Unit = cum</i> <i>Taking out put = 1 cum</i> Concrete Grade M15 Rate as per item No. 12.8 (A) including GST, OH, CP & Cess. 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. Rate per cum <i>say 9558.00</i>					
			cum	1.000	9371.00	9371.00	Item 12.8 (A)
						187.42	
						9558.42	
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 <i>Unit = cum</i> <i>Taking output = 1 cum</i> a) Material Stone weighing not less than 40kg Stone spalls of minimum 25 mm size b) Labour Mate Mason Mazdoor c) GST (multiplying factor 0.2016) on (a+b) d) Overhead charges @ 20 % on (a+b+c) e) Contractor's profit @ 10 % on (a+b+c+d) f) Cess @ 1% on (a+b+c+d+e) Rate per cum = (a+b+c+d+e+f) <i>say 2404.00</i>					
			cum	1.000	893.00	893.00	M-003
			cum	0.200	300.00	60.00	M-008
			day	0.040	551.00	22.04	L-12
			day	0.350	593.00	207.55	L-11
			day	0.750	424.00	318.00	L-13
						302.52	
						360.62	
						216.37	
						23.80	
						2403.90	
15.4		B Cement Concrete Blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15 <i>Unit = cum</i> <i>Taking output = 1 cum</i> Concrete Grade M15 Rate as per item No. 12.8 (A) including GST, OH, CP & Cess. Add 2 per cent of cost to account for nominal surface reinforcement and filling of granular material in recesses between blocks. Rate per cum <i>say 9558.00</i>					
			cum	1.000	9371.00	9371.00	Item 12.8 (A)
						187.42	
						9558.42	
15.5	2504	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification <i>Unit = cum</i> <i>Taking output = 1 cum</i> a) Material Graded stone aggregate of required size					
			cum	1.200	1450.00	1740.00	M-012

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RIVER TRAINING AND PROTECTION WORKS

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		b) Labour					
		Mate	day	0.050	551.00	27.55	L-12
		Mazdoor (Skilled)	day	0.250	508.00	127.00	L-15
		Mazdoor *	day	1.000	424.00	424.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				467.42	
		d) Overhead charges @ 20 % on (a+b+c)				557.19	
		e) Contractor's profit @ 10 % on (a+b+c+d)				334.32	
		f) Cess @ 1% on (a+b+c+d+e)				36.77	
		Rate per cum = (a+b+c+d+e+f)				3714.25	
					say	<u>3714.00</u>	
		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 mortar 1:3 (Rate as in Item 12.6 sub-analysis) excluding GST, OH, CP & Cess	cum	0.330	5727.00	1889.91	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	5625.00	1856.25	Item 12.8 (A)
		Add 1 per cent of cost to account for excavation for preparation of bed.				37.46	
		c) Material					
		Stone	cum	1.000	893.00	893.00	M-003
		Stone Spalls	cum	0.200	300.00	60.00	M-008
		d) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mason	day	0.500	593.00	296.50	L-11
		Mazdoor (for laying stones, filling of quarry spalls)	day	1.500	424.00	636.00	L-13
		e) GST (multiplying factor 0.2016) on (a+b+c+d)				1144.23	
		f) Overhead charges @ 20 % on (a+b+c+d+e)				1363.99	
		g) Contractor's profit @ 10 % on (a+b+c+d+e+f)				818.40	
		h) Cess @ 1% on (a+b+c+d+e+f+g)				90.02	
		Rate per cum = (a+b+c+d+e+f+g+h)				9129.84	
					say	<u>9130.00</u>	
		* Includes cement mortar for laying and filling of joints.					

CHAPTER - 15
RIVER TRAINING AND PROTECTION WORKS

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	9371.00	9371.00	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	9371.00	3092.43	Item 12.8 (A)
		Add 1 per cent of cost to account for excavation for preparation of bed.				124.63	
		Rate per cum				12588.06	
					say	<u>12588.00</u>	
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	893.00	893.00	M-003
		Stone Spalls	cum	0.200	300.00	60.00	M-008
		b) Labour					
		Mate	day	0.100	551.00	55.10	L-12
		Mason	day	0.500	593.00	296.50	L-11
		mazdoor	day	1.500	424.00	636.00	L-13
		Add 1 per cent of (b) for trimming and preparation of base.				9.88	
		c) GST (multiplying factor 0.2016) on (a+b)				393.22	
		d) Overhead charges @ 20 % on (a+b+c)				468.74	
		e) Contractor's profit @ 10 % on (a+b+c+d)				281.24	
		f) Cess @ 1% on (a+b+c+d+e)				30.94	
		Rate per cum = (a+b+c+d+e+f)				3124.62	
					say	<u>3125.00</u>	
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	6751.00	6751.00	Item 12.7 (A)
		Rate per cum			say	<u>6751.00</u>	
		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	9371.00	9371.00	Item 12.8 (A)
		Rate per cum			say	<u>9371.00</u>	
	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					

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RIVER TRAINING AND PROTECTION WORKS

RIVER TRAINING AND PROTECTION WORKS							
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	893.00	893.00	M-003
		Stone Spalls	cum	0.200	300.00	60.00	M-008
b) Labour							
		Mate	day	0.050	551.00	27.55	L-12
		Mason	day	0.250	593.00	148.25	L-11
		Mazdoor	day	1.000	424.00	424.00	L-13
		Add 1 per cent of cost of (a+b) for trimming and preparation of bed.				15.53	
		c) GST (multiplying factor 0.2016) on (a+b)				316.18	
		d) Overhead charges @ 20 % on (a+b+c)				376.90	
		e) Contractor's profit @ 10 % on (a+b+c+d)				226.14	
		f) Cess @ 1% on (a+b+c+d+e)				24.88	
		Rate per cum = (a+b+c+d+e+f)				2512.43	
					say	2512.00	
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	551.00	154.28	L-12
		Mazdoor	day	5.000	424.00	2120.00	L-13
		Mazdoor (Skilled)	day	2.000	508.00	1016.00	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	191.00	11651.00	M-102
		Stone boulders with least dimension of 200 mm	cum	12.600	893.00	11251.80	M-003
		Stone spalls of minimum size 25 mm	cum	2.520	300.00	756.00	M-008
		c) GST (multiplying factor 0.2016) on (a+b)				5432.93	
		d) Overhead charges @ 20 % on (a+b+c)				6476.40	
		e) Contractor's profit @ 10 % on (a+b+c+d)				3885.84	
		f) Cess @ 1% on (a+b+c+d+e)				427.44	
		Cost for 12.60 cum (a+b+c+d+e+f)				43171.69	
		Rate per cum (a+b+c+d+e+f)/12.60				3426.32	
					say	3426.00	

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.

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RIVER TRAINING AND PROTECTION WORKS

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					
		<p>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.</p> <p>Unit = cum</p> <p>Taking output = 2 x 1 x 0.3 x 10 Nos. = 6.00 cum</p>					
		a) Labour					
		Mate	day	0.140	551.00	77.14	L-12
		Mazdoor	day	2.500	424.00	1060.00	L-13
		Mazdoor (Skilled)	day	1.000	508.00	508.00	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	191.00	12415.00	M-102
		Stone boulders with least dimension of 200 mm	cum	6.000	893.00	5358.00	M-003
		Stone spalls of minimum size 25 mm	cum	1.200	300.00	360.00	M-008
		c) GST (multiplying factor 0.2016) on (a+b)				3987.27	
		d) Overhead charges @ 20 % on (a+b+c)				4753.08	
		e) Contractor's profit @ 10 % on (a+b+c+d)				2851.85	
		f) Cess @ 1% on (a+b+c+d+e)				313.70	
		Cost for 6.00 cum (a+b+c+d+e+f)				31684.04	
		Rate per cum (a+b+c+d+e+f)/6.00				5280.67	
						say	
						<u>5281.00</u>	
		<p>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.</p>					

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

CHAPTER-16
REPAIR AND REHABILITATION

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
16.1	2809	Removal of existing cement concrete wearing coat including its disposal complete as per Technical Specification without causing any detrimental effect to any part of the bridge structure and removal of dismantled material with all lifts and lead upto 1000 m <i>Unit = Sq m (Thickness 75 mm)</i> <i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.060	551.00	33.06	L-12
		Mazdoor	day	1.000	424.00	424.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with pneumatic breaker/jack hammer along with accessories.	hour	1.000	658.00	658.00	P&M-001
		Tractor-trolley.	hour	0.500	530.00	265.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				278.22	
		d) Overhead charges @ 10 % on (a+b+c)				165.83	
		e) Contractor's profit @ 10 % on (a+b+c+d)				182.41	
		f) Cess @ 1% on (a+b+c+d+e)				20.07	
		Cost for 10 sqm = (a+d+c+d+e+f)				2026.59	
		Rate per sqm = (a+b+c+d+e+f)/10				202.66	
					<i>say</i>	203.00	
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. <i>Unit = Sq m</i> <i>Taking output = 10 sqm</i>					
		a) Labour					
		Mate	day	0.030	551.00	16.53	L-12
		Mazdoor	day	0.750	424.00	318.00	L-13
		b) Machinery					
		Air Compressor 250 cfm with pneumatic breaker.	hour	0.750	658.00	493.50	P&M-001
		Tractor-trolley.	hour	0.400	530.00	212.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				209.67	
		d) Overhead charges @ 10 % on (a+b+c)				124.97	
		e) Contractor's profit @ 10 % on (a+b+c+d)				137.47	
		f) Cess @ 1% on (a+b+c+d+e)				15.12	
		Cost for 10 sqm = (a+d+c+d+e+f)				1527.26	
		Rate per sqm = (a+b+c+d+e+f)/10				152.73	
					<i>say</i>	153.00	
16.3	2807	Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical Specification <i>Unit = Sq m</i> <i>Taking output = 1 sqm</i> Assuming thickness 25 mm					
		a) Material					
		Cement	kg	16.000	9.10	145.60	M-081/1000
		Graded sand	cum	0.040	650.00	26.00	M-005
		Wire mesh 50mm x 50mm size of 3mm wire	kg	2.000	170.00	340.00	M-192
		Epoxy	kg	0.670	257.00	172.19	M-095
		Accelerator compound for guniting @ 4 per cent of weight of cement	kg	0.640	64.00	40.96	M-180

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REPAIR AND REHABILITATION

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				14.50	
		b) Labour					
		Mate	day	0.010	551.00	5.51	L-12
		Mason	day	0.040	593.00	23.72	L-11
		Mazdoor	day	0.140	424.00	59.36	L-13
		c) Machinery					
		Compressor with guniting equipment along with accessories	hour	0.100	896.00	89.60	P&M-076
		d) GST (multiplying factor 0.2016) on (a+b+c)				184.96	
		e) Overhead charges @ 10 % on (a+b+c+d)				110.24	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				121.26	
		g) Cess @ 1% on (a+b+c+d+e+f)				13.34	
		Rate per sqm = (a+b+c+d+e+f+g)				1347.24	
					say	1347.00	
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	32.00	32.00	M-129
		Cement, fixing compound and consumables @ 15 per cent of cost of nipple				4.80	
		b) Labour					
		Mate	day	0.010	551.00	5.51	L-12
		Mazdoor (Skilled) labour for drilling	day	0.080	508.00	40.64	L-15
		Mazdoor (Skilled) labour for fixing nipple and sealing inlets	day	0.080	508.00	40.64	L-15
		Mazdoor for cutting and removing of nipples	day	0.040	424.00	16.96	L-13
		Add 10 per cent of labour cost for drilling holes etc				10.38	
		c) GST (multiplying factor 0.2016) on (a+b)				30.43	
		d) Overhead charges @ 10 % on (a+b+c)				18.14	
		e) Contractor's profit @ 10 % on (a+b+c+d)				19.95	
		f) Cess @ 1% on (a+b+c+d+e)				2.19	
		Rate per No. = (a+b+c+d)				221.64	
					say	222.00	
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	9.10	10.01	M-081/1000
		Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				2.00	
		b) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mazdoor (Skilled)	day	0.100	508.00	50.80	L-15
		Mazdoor	day	0.100	424.00	42.40	L-13

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REPAIR AND REHABILITATION

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	193.00	19.30	M-111
		d) GST (multiplying factor 0.2016) on (a+b+c)				33.99	
		e) Overhead charges @ 10 % on (a+b+c+d)				20.26	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				22.28	
		g) Cess @ 1% on (a+b+c+d+e+f)				2.45	
		Rate per kg = (a+b+c+d+e+f+g)				247.57	
					say	248.00	
		B Cement Mortar (1:1) Grouting					
		Unit = kg					
		Taking output = 1 kg					
		a) Material					
		Cement including 10 per cent wastage	kg	0.550	9.10	5.01	M-081/1000
		Sand including 10 per cent wastage	kg	0.550	0.43	0.24	M-005/1500
		Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				1.00	
		b) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mazdoor (Skilled)	day	0.100	508.00	50.80	L-15
		Mazdoor	day	0.100	424.00	42.40	L-13
		c) Machinery					
		Grout pump with agitator and accessories	hour	0.100	193.00	19.30	M-111
		d) GST (multiplying factor 0.2016) on (a+b+c)				32.83	
		e) Overhead charges @ 10 % on (a+b+c+d)				19.57	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				21.52	
		g) Cess @ 1% on (a+b+c+d+e+f)				2.37	
		Rate per kg = (a+b+c+d+e+f+g)				239.12	
					say	239.00	
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	551.00	33.06	L-12
		Mazdoor (Skilled)	day	0.750	508.00	381.00	L-15
		Mazdoor	day	0.750	424.00	318.00	L-13
		b) Material					
		Pre-packed polymer concrete based on epoxy system complete with curing compound, initiator and promoter including 5 per cent wastage.	kg	315.000	39.00	12285.00	M-145
		c) Machinery					
		Grout pump with agitator and accessories	hour	2.000	193.00	386.00	M-111
		d) GST (multiplying factor 0.2016) on (a+b+c)				2702.06	
		e) Overhead charges @ 10 % on (a+b+c+d)				1610.51	
		f) Contractor's profit @ 10 % on (a+b+c+d+e)				1771.56	
		g) Cess @ 1% on (a+b+c+d+e+f)				194.87	
		Cost for 10 sqm = a+b+c+d+e+f+g				19682.06	
		Rate per sqm = (a+b+c+d+e+f+g)/10				1968.21	
					say	1968.00	

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REPAIR AND REHABILITATION

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Note This item is a proprietary 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	257.00	282.70	M-095
		b) Labour					
		Mate	day	0.080	551.00	44.08	L-12
		Mazdoor (Skilled)	day	0.100	508.00	50.80	L-15
		Mazdoor	day	0.100	424.00	42.40	L-13
		c) Machinery					
		Epoxy Injection gun	hour	0.100	3723.00	372.30	P&M-078
		d) GST (multiplying factor 0.2016) on (a+b+c)					159.72
		e) Overhead charges @ 10 % on (a+b+c+d)					95.20
		f) Contractor's profit @ 10 % on (a+b+c+d+e)					104.72
		g) Cess @ 1% on (a+b+c+d+e+f)					11.52
		Rate per kg = (a+b+c+d+e+f+g)					1163.44
					say	1163.00	
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	551.00	22.04	L-12
		Mazdoor	day	0.500	424.00	212.00	L-13
		Mazdoor (Skilled)	day	0.500	508.00	254.00	L-15
		b) Machinery					
		Air compressor 250 cfm	hour	1.000	658.00	658.00	P&M-001
		Shotcreteing equipment	hour	1.000	896.00	896.00	P&M-076
		water tanker 6 KL capacity	hour	0.020	724.00	14.48	P&M-060
		c) Material					
		Cement	kg	120.000	9.10	1092.00	M-081/1000
		Sand	cum	0.150	650.00	97.50	M-005
		Coarse aggregate of size 4.75mm	cum	0.150	780.00	117.00	M-024
		Quick setting compound	kg	2.500	59.00	147.50	M-147
		Water	KL	0.100	71.00	7.10	M-189
		d) GST (multiplying factor 0.2016) on (a+b+c)					709.15
		e) Overhead charges @ 10 % on (a+b+c+d)					422.68
		f) Contractor's profit @ 10 % on (a+b+c+d+e)					464.95
		g) Cess @ 1% on (a+b+c+d+e+f)					51.14
		Cost for 10 sqm = a+b+c+d+e+f+g					5165.54
		Rate per sqm = (a+b+c+d+e+f+g)/10					516.55
					say	517.00	

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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 <i>Unit = sqm</i> <i>Taking output = 10 sqm</i> Assumed thickness - 10 mm					
		a) Material					
		Acrylic polymer bonding coat	Litre	1.400	371.00	519.40	M-057
		pre-packed cement based polymer mortar of strength 45 Mpa at 28 days	kg	12.000	39.00	468.00	M-145
		Add 3 per cent of (a) above for wastage.				29.62	
		b) Labour					
		Mate	day	0.040	551.00	22.04	L-12
		Mazdoor (Skilled)	day	0.500	508.00	254.00	L-15
		Mazdoor	day	0.500	424.00	212.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				303.42	
		d) Overhead charges @ 10 % on (a+b+c)				180.85	
		e) Contractor's profit @ 10 % on (a+b+c+d)				198.93	
		f) Cess @ 1% on (a+b+c+d+e)				21.88	
		Cost for 10 sqm = a+b+c+d+e+f				2210.14	
		Rate per sqm = (a+b+c+d+e+f)/10				221.01	
					say	<u>221.00</u>	
16.11	2805	Epoxy bonding of new concrete to old concrete <i>Unit = sqm</i> <i>Taking output = 10 sqm</i>					
		a) Material					
		Epoxy resin with pot life not less than 60-90 minutes and satisfying testing as per clause 2803.9	kg	8.000	169.00	1352.00	M-098
		Add 3 per cent of (a) above for wastage.				40.56	
		b) Labour					
		Mate	day	0.040	551.00	22.04	L-12
		Mazdoor (Skilled)	day	0.500	508.00	254.00	L-15
		Mazdoor	day	0.500	424.00	212.00	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				379.13	
		d) Overhead charges @ 10 % on (a+b+c)				225.97	
		e) Contractor's profit @ 10 % on (a+b+c+d)				248.57	
		f) Cess @ 1% on (a+b+c+d+e)				27.34	
		Cost for 10 sqm = a+b+c+d+e+f				2761.61	
		Rate per sqm = (a+b+c+d+e+f)/10				276.16	
					say	<u>276.00</u>	
16.17		Replacement of Expansion Joints complete as per drawings <i>Unit -1 RM</i> <i>Taking output = 12 RM</i>					
		a) Material					
		Epoxy for bonding new concrete to old concrete @ 0.8 kg/sqm	kg	9.600	257.00	2467.20	M-095
		M-30 grade cement concrete excluding GST,OH, CP & Cess (Rate as per items 14.1 C (i))	cum	3.600	7619.00	27428.40	Item 14.1(C)
		b) Labour					
		Removal of old expansion joint including breaking of concrete, cutting of lugs and shifting of broken material etc.					
		Mate	day	0.260	551.00	143.26	L-12
		Mazdoor	day	6.000	424.00	2544.00	L-13

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Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mazdoor (Skilled)	day	0.500	508.00	254.00	L-15
		c) GST (multiplying factor 0.2016) on (a+b)				6619.91	
		d) Overhead charges @ 10 % on (a+b+c)				3945.68	
		e) Contractor's profit @ 10 % on (a+b+c+d)				4340.25	
		f) Cess @ 1% on (a+b+c+d+e)				477.43	
		Cost for replacement of 12 RM = a+b+c+d+e+f				48220.13	
		Rate per RM = (a+b+c+d+e+f)/12				4018.34	
					say	<u>4018.00</u>	
		<p>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.</p>					
16.18		Replacement of Damaged Concrete Railing.					
		<i>Unit = RM</i>					
		<i>Taking output = 10 RM</i>					
		a) Labour					
		Labour for dismantling old railing and disposal of dismantled material.					
		Mate	day	0.200	551.00	110.20	L-12
		Mazdoor	day	5.000	424.00	2120.00	L-13
		b) Machinery					
		Tractor-trolley for disposal of dismantled material	hour	1.000	530.00	530.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				556.46	
		d) Overhead charges @ 10 % on (a+b+c)				331.67	
		e) Contractor's profit @ 10 % on (a+b+c+d)				364.83	
		f) Cess @ 1% on (a+b+c+d+e)				40.13	
		Cost for 10 m = a+b+c+d+e+f				4053.29	
		Rate per metre = (a+b+c+d+e+f)/10				405.33	
					say	<u>405.00</u>	
		<p>Note The rate for the provision of new railing may be adopted from the chapter on superstructure.</p>					
16.19		Replacement of Crash Barrier.					
		<i>Unit = RM</i>					
		<i>Taking output = 10 M</i>					
		a) Labour					
		Labour for dismantling old railing and disposal of dismantled material.					
		Mate	day	0.400	551.00	220.40	L-12
		Mazdoor	day	10.000	424.00	4240.00	L-13
		b) Machinery					
		Tractor-trolley for disposal of dismantled material	hour	1.000	530.00	530.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				1006.06	
		d) Overhead charges @ 10 % on (a+b+c)				599.65	
		e) Contractor's profit @ 10 % on (a+b+c+d)				659.61	
		f) Cess @ 1% on (a+b+c+d+e)				72.56	
		Cost for 10 m = a+b+c+d+e+f				7328.28	
		Rate per metre = (a+b+c+d+e+f)/10				732.83	
					say	<u>733.00</u>	
		<p>Note The rate for the construction of new crash barrier may be adopted from chapter 8 on Traffic and Transportation.</p>					
16.20		Replacement of Damaged Mild Steel Railing					
		<i>Unit = RM</i>					
		<i>Taking output = 10 M</i>					
		a) Labour					
		Labour for dismantling old railing and disposal of dismantled material.					

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REPAIR AND REHABILITATION

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
		Mate	day	0.160	551.00	88.16	L-12
		Mazdoor	day	4.000	424.00	1696.00	L-13
		b) Machinery					
		Tractor-trolley for disposal of dismantled material	hour	1.000	530.00	530.00	P&M-053
		c) GST (multiplying factor 0.2016) on (a+b)				466.53	
		d) Overhead charges @ 10 % on (a+b+c)				278.07	
		e) Contractor's profit @ 10 % on (a+b+c+d)				305.88	
		f) Cess @ 1% on (a+b+c+d+e)				33.65	
		Cost for 10 m = a+b+c+d+e+f				3398.29	
		Rate per metre = (a+b+c+d+e+f)/10				339.83	
					say	<u>340.00</u>	
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	551.00	22.04	L-12
		Mazdoor	day	1.000	424.00	424.00	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	7619.00	2285.70	Item 14.1(C)
		This may be priced based on the rate given the chapter of superstructure.					
		c) GST (multiplying factor 0.2016) on (a+b)				550.72	
		d) Overhead charges @ 10 % on (a+b+c)				328.25	
		e) Contractor's profit @ 10 % on (a+b+c+d)				361.07	
		f) Cess @ 1% on (a+b+c+d+e)				39.72	
		Cost for 10 m = a+b+c+d+e+f				4011.50	
		Rate per metre = (a+b+c+d+e+f)/10				401.15	
					say	<u>401.00</u>	
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	7619.00	761.90	Item 14.1(C)
		HYSD bar reinforcement Rate as per item No 14.2(Excluding GST,OH, CP & Cess)	tonne	0.010	76604.00	766.04	Item 14.2 A
		b) Labour*					
		Mate	day	0.020	551.00	11.02	L-12
		mazdoor	day	0.200	424.00	84.80	L-13

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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 (multiplying factor 0.2016) on (a+b)				327.35	
		d) Overhead charges @ 10 % on (a+b+c)				195.11	
		e) Contractor's profit @ 10 % on (a+b+c+d)				214.62	
		f) Cess @ 1% on (a+b+c+d+e)				23.61	
		Cost for 10 m = a+b+c+d+e+f				2384.45	
		Rate per m = (a+b+c+d)/10				238.45	
					say	<u>238.00</u>	
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 .					
		<i>Unit = Running meter.</i>					
		<i>Taking output = 10 M.</i>					
		a) Material					
		Mild steel ISMC series	kg	29.000	50.73	1471.17	M-179/1000
		Flat iron	kg	10.000	50.73	507.30	M-179/1000
		MS Bolt and nuts	kg	1.000	120.00	120.00	M-130
		Add 5 per cent of cost of material for painting.				104.92	
		b) Labour					
		Mate	day	0.016	551.00	8.82	L-12
		Mazdoor (Skilled)	day	0.200	508.00	101.60	L-15
		Mazdoor	day	0.200	424.00	84.80	L-13
		c) GST (multiplying factor 0.2016) on (a+b)				483.56	
		d) Overhead charges @ 10 % on (a+b+c)				288.22	
		e) Contractor's profit @ 10 % on (a+b+c+d)				317.04	
		f) Cess @ 1% on (a+b+c+d+e)				34.87	
		Cost for 10 m = a+b+c+d+e+f				3522.30	
		Rate per m = (a+b+c+d+e+f)/10				352.23	
					say	<u>352.00</u>	

Chapter – 17

B. Bridge Works

Example :

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 overhead charges considering the following elements -

- i. Site accommodation, 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 separately 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 specification of materials 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 requiremenr 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.

CHAPTER - 17
STEEL BRIDGES

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
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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).					
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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	50728.00	22662734.00	M-179
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Nuts & Bolts	Kg	12764.200	120.00	1531704.00	M-130
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b) Labour

(for cutting, bending, making holes, joining, welding and erecting in position)

Mate	day	421.220	551.00	232092.22	L-12
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Fitter	day	2340.100	593.00	1387679.30	L-08
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Blacksmith	day	2340.100	593.00	1387679.30	L-02
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Welder	day	2340.100	593.00	1387679.30	L-02
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Mazdoor	day	3510.140	424.00	1488299.36	L-13
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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	141.00	704300.64	Item 8.9
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Add @ 1% on cost of material for scaffolding and temporary arrangement for assembling on (a)				241944.38	
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Electrodes, cutting gas and other consumables @ 10 percent of cost of (a) above.				2419443.80	
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(Including GST,OH,CP & Cess of C)

c) GST (multiplying factor 0.2016) on (a+b)				6063698.08	
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e) Overhead charges @ 10 % on (a+b+d)				3614156.56	
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f) Contractor's profit @ 10 % on (a+b+d+f)				3007786.75	
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g) Cess @ 1% on (a+b+d+e+f)				300778.67	
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Rate for 425.472 MT (a+b+c+d+e+f+g)				46429976.36	
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Rate per MT = (a+b+c+d+e+f+g)/425.472				109125.81	
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say 109126.00

CHAPTER - 17
STEEL BRIDGES

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
17.2	1900	<p>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</p> <p>COMPOSITE BRIDGE</p> <p>Case (i) Worked out based on 40m single span or in Multiples</p> <p>Unit = 1 MT</p> <p>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)</p> <p>Formwork, Staging and Cost of erection tonne 1.000 23581.03 23581.03 Item 17.1</p> <p>15% + 15% = 30% of Item : 17.1 (a+b+c+d) (Excluding GST,OH,CP &Cess)</p> <p>b) One coat of ready mixed, red lead primer painting after erection at site conforming to IS:102</p> <p>2/5 part considered for one coat of primer sqm 11.740 141.00 1655.34 Item 8.9</p> <p>after cleaning as specified under 1906 of section 1900</p> <p>Two coat of aluminium paint over steel sqm 11.740 141.00 1655.34 Item 8.9</p> <p>primer after cleaning as specified under 1906 of section 1900</p> <p>(Including GST,OH,CP &Cess of b)</p> <p>c) GST (multiplying factor 0.2016) on (a+b) 4753.94</p> <p>d) Overhead charges @ 20 % on (a+b+c) 5666.99</p> <p>e) Contractor's profit @ 10 % on (a+b+c+d) 3400.20</p> <p>f) Cess @ 1% on (a+b+d+e) 374.02</p> <p>Rate per MT = (a + b + c + d+e+f) 41086.86</p> <p style="text-align: right;">say <u>41087.00</u></p>					